31 December 2006

Technical Memorandum No. 1 – Administrative Final

To: Donette Dunaway, Central Coast Regional Water Quality Control Board and Carl Niizawa, P.E., DEE, City of Salinas

From: Chris Conway, CPSWQ, Brad Moore, P.E., Sachi Itagaki, P.E., and Sarah Peterson

Subject: Review of City of Salinas Policies and Procedures for Conformance with Low Impact Development (LID) Principles and NPDES Permit Requirements
K/J 0695006

Executive Summary

The primary purpose of this memorandum is to present the results of Kennedy/Jenks Consultants (Kennedy/Jenks) review of the City of Salinas (City) planning and development documents, codes and ordinances. In addition to documents such as the Salinas General Plan, the City's draft Storm Water, Grading and Zoning Ordinances were reviewed for conformance with the requirements of Regional Board Order No. R3-2004-0135, which includes the implementation of Low Impact Development (LID) principles and practices. The following provides our final review comments and includes suggested clarifications, modifications, and expansions for the City and the Central Coast Regional Water Quality Control Board (Regional Board) to consider during the next document, ordinance and permit revision cycle.

The Regional Board and the City provided a significant number of comments on the draft version of this memo (dated 4 August 2006). As a result, a significant effort has gone into responding to the comments and providing a secondary review of the City's related documents and ordinances. Therefore numerous revisions have been incorporated into this memo.

It should be noted that per the Notice of Violation (NOV) issued to the City by the Regional Board on 1 September 2006, the City was issued the following "Required Action":

"Within 30 days of receipt of the Kennedy/Jenks' Final Technical Memorandum No. 1, the City must incorporate, formally address, or provide detailed plans on how **all** comments provided in the memorandum will be addressed, or provide justification acceptable to the Executive Officer for excluding or modifying any suggested revisions."

Therefore the City should be prepared to thoroughly review this memo as soon as possible and prepare a response to the Regional Board that addresses the above "Required Action".

Additional Action Items:

1. As noted in Sections 4.2.1 and 4.2.2 below, Kennedy/Jenks recommends the Regional Board issue an addendum to Attachment 4 of Regional Board Order R3-2004-0135 to clarify the numeric sizing criteria for volume and flow-based treatment control BMPs.

1.0 Introduction

Kennedy/Jenks has been retained by the Central Coast Regional Water Quality Control Board (Regional Board) to develop design standards for the City that will effectively reduce the volume, rate, and pollutant loading of urban runoff. To accomplish this objective, Kennedy/Jenks has reviewed a selected number of relevant documents for compliance with the requirements for new development and significant redevelopment stated in Attachment 4 of Regional Board Order No. R3-2004-0135. The Regional Board's Order is consistent with federal National Pollutant Discharge Elimination System (NPDES) storm water permitting requirements.

The City's development related codes and ordinances were also reviewed for conformance with Low Impact Development (LID) principles and practices, which have been shown to effectively reduce and treat urban runoff in any type of climatic or geologic condition. This review formed the basis for development of a model LID ordinance and a Development Standards Plan (DSP) for the City with LID design standards consistent with local conditions and the City's governmental framework.

The purpose of this memorandum is to:

- Discuss the concept of LID and the common practices used to reduce the rate, volume and pollutant loading of urban runoff.
- Discuss the responses to the questionnaires distributed to City staff.
- Summarize the Kennedy/Jenks teams' review of project relevant documents and the policies, procedures and ordinances that support and conflict with LID principles.
- Present recommended of policies and standards for implementing LID in the City of Salinas.
- Discuss the Public Education and Outreach Process related to the development and implementation of the Salinas DSP.

2.0 Low Impact Development

Low Impact Development (LID) is an innovative storm water management approach with the basic principle that is modeled after nature: manage runoff from rainfall and urban use of water at the source using uniformly distributed decentralized micro-scale controls. It was pioneered in Prince Georges County, Maryland and has been applied successfully across the country (Village Homes in Davis, CA is one example). LID's goal is to mimic a site's predevelopment hydrology by using design practices and techniques that effectively capture, filter, store, evaporate, detain and infiltrate runoff close to its source. This can be accomplished by implementing the following the basic principles:

1. Protecting areas of native vegetation and open space;

2. Reducing the amount of compacted soil and continuously connected hard surfaces; and,

3. Creating site design features that direct runoff to vegetated areas with engineered soils.

This order mirrors the order of events that a developer would undergo to apply LID.

LID practices are based on the premise that storm water management should not be seen as merely storm water disposal. Instead of conveying the majority of runoff into underground pipes and managing and treating storm water in large, costly end-of-pipe facilities located at the bottom of drainage areas, LID addresses storm water through small, cost-effective landscape features located at the lot level. Redundant semi-regional LID practices (e.g. a bioretention basin for a residential neighborhood block located in the City ROW) can provide additional storm water management (quality and quantity control) and offset lot level practices that are not maintained and/or modified by private landowners. Almost all components of the urban environment have the potential to serve as LID practices. This includes residential, commercial, industrial, and municipal open space, rooftops, streetscapes, parking lots, sidewalks, and medians. LID is a versatile approach that can be applied equally well to new development, urban retrofits, redevelopment, and revitalization projects. Local hydrologic and geotechnical conditions and regulatory requirements must be considered in the design of LID practices.

LID is one of several new urban planning techniques. It differs from other techniques such as “Smart Growth” and “Sustainable Development” in that LID is primarily focused on alternative storm water management techniques. Smart Growth is a term that describes the efforts of communities across the country to manage and direct growth in a way that minimizes damage to the environment and builds livable and economically sustainable towns and cities. Livability suggests, among other things, that the quality of our built environment and how well we preserve the adjacent natural environment directly affects our quality of life. Smart Growth calls for the investment of time, attention, and resources in central cities and older suburbs to restore community and vitality. It advocates patterns for newly developing areas that promote both a balanced mix of land uses and a transportation system that accommodates pedestrians, bicycles, transit and automobiles.

Sustainable Development is a term that grew out of the conservation/environmental movement of the 1970's. While the conservation/environmental movement asked questions about preserving the Earth's resources, Sustainable Development includes questions about how human decisions affect the Earth's environment. A sustainable community preserves and enhances the quality of life of residents both within and between communities, while minimizing local impacts on the natural environment. By recognizing the interdependent relationships between the natural, social, and economic parameters of a community, Sustainable Development creates conditions that strengthen the health of all. Dependent on partnerships

between governments, researchers, businesses, and community members, Sustainable Development involves an inclusive and expansive decision-making process that considers long-term economic, ecological, and social prosperity.

LID should be the drainage design standard applied to Smart Growth and Sustainable Development. LID addresses the drainage component of new development and redevelopment projects by implementing practices that mitigate the increased volume, rate, and pollutant loading of urban runoff. LID practices mimic natural hydrologic functions by filtering urban runoff through vegetation, soils and organic matter, allowing evapotranspiration by vegetation, biodegradation of pollutants by soil bacteria, infiltration and groundwater recharge. LID practices that mimic natural hydrologic functions include green roofs, vegetated swales, bioretention basins and permeable pavement. In addition to providing water quality benefits, LID practices can reduce flooding and assist with water conservation.

Community participation in the planning and construction of LID practices, particularly at redevelopment projects, can greatly add to the long-term success of a project and increase public awareness of the need to effectively manage storm water quantity and quality. Public education signs and placards installed at LID project sites also provide additional benefits.

LID practices are considered Best Management Practices (BMPs). Planning and implementation of BMPs to protect surface water quality is required under the NPDES storm water permit issued to the City by the Regional Board. The permit requires the City to control pollutants in storm water discharges to the Maximum Extent Practicable (MEP). The Regional Board supports the use of LID practices because they meet the MEP definition and have been proven to be effective, feasible and economically practicable in other communities (December 22, 2005 Regional Board letter to the City of Salinas – Appendix A).

3.0 City Responses to Questionnaires

Kennedy/Jenks developed a questionnaire for City staff in Development and Engineering Services, Maintenance Services and other relevant departments. The objective of the questionnaire was to help identify City codes, ordinances, design standards, and other related local and regional policies and procedures that support and potentially conflict with LID principles and practices. The questions about current development and storm drainage policies and procedures were also intended to understand the measures necessary for the City to implement LID principles and practices into all new development and redevelopment projects within its existing governmental framework.

Appendix B presents a copy of the questionnaire and the City's responses.

The questionnaire covered the following subjects:

- The City's design, review and approval process for storm drainage facilities
- Methods used to assist and monitor the proper design, construction and maintenance of storm drainage facilities
- Management of erosion and sediment control at construction sites
- The role of landscape architects in the design of storm drainage facilities
- Potential institutional barriers to implementing LID
- Outdoor hazardous materials storage and spill control and cleanup policies and procedures for industrial and commercial development projects
- Infiltration testing requirements for septic systems
- Training and education opportunities for LID

The City's responses to the questionnaire are summarized below. Full questions and responses are found in Appendix B.

- The design, review and approval process for storm drainage facilities is managed by the Development and Engineering Services (DES) Dept through a Capital Improvement Project process or through the development/subdivision review process.
- DES reviews and conditions new development proposals and Maintenance Services participates in the review of conceptual and final plans
- Most of the City is developed under Precise/Specific plans, which include a storm drain element and provisions for regional detention/retention ponds in developments of 5 -10 acres or more.
- Small infill developments are rarely required to install retention detention ponds and developments of 1 acre or less have few storm drain system requirements.
- Management of erosion and sediment control at construction sites is generally in compliance with NPDES permit requirements. Storm Water Pollution Prevention Plans (SWPPP) and Best Management Practices (BMPs) are required and implemented at all construction sites that disturb one or more acres.
- Compliance with post-construction NPDES permit requirements includes conditioning developments to reduce hardscape, maximize landscaped areas, plant larger canopy trees, direct drainage into/through landscaped areas, and consideration of more permeable-type pavements; all as appropriate for the field conditions.
- The City does not currently require applicants to graphically display proposed post construction structural treatment controls and LID practices on development plans.

- Landscape architects are typically not involved in the design of storm drainage facilities and typically only get involved in subdivisions consisting of 20+ residential homes and commercial/multi-family sites of 5 acres or more.
- For development of less than 5 acres but greater than 1 acre, designers or architects typically prepare the landscape plans. These designers are often not licensed or certified.
- A tiered approach for small, mid-sized, and large projects would be helpful for designers.
- Most small projects are designed by individuals with little knowledge about NPDES permit requirements and LID.
- The City is in the process of developing handouts to assist the designers and reviewers of structural treatment controls and LID practices.
- Additional tools to the assist with the proper design, construction and maintenance of common structural treatment control and LID measures would be helpful.
- Outdoor hazardous materials storage, reporting and spill control and cleanup policies and procedures for industrial and commercial development projects are managed and enforced by the City fire department and the Monterey County Environmental Health department. They include requirements to maintain spill control and cleanup supplies and installation of storm drain shut off valves or secondary containment structures.
- There are only a few septic systems with leach fields present in older developments within the City limits. New leach fields are not permitted. Therefore, the City does not have infiltration testing requirements for septic systems.
- Some residents in developments north of the Salinas City limits, developed in the County (but located adjacent to the City) currently use septic tanks and leach fields. However the City does have its sewer system connected to and serving a number of residents north of the City and plans to connect future planned developments outside the planned growth area to its sewer system (as well as all planned developments within the future growth area).
- The City is not aware of any local documented cases of nitrate contamination of groundwater from infiltration of waste water in septic system leach fields.
- Infiltration only post-construction BMPs, such as infiltration basins/trenches, are only allowed at locations where native soils provide adequate percolation and with the approval of the City Engineer. Infiltration testing is currently not required.
- Property owners are responsible for the operation and maintenance (O&M) of storm drain facilities located on private property.

- Public storm drainage systems (and sometimes, but rarely private systems) are recorded on as-built plans that are maintained by Development and Engineering Services Department.
- The City does not document or oversee maintenance on private property.
- Retention/detention ponds in new development are typically private facilities maintained either through a separate maintenance districts or the property owners.
- Maintenance districts are supervised by the City's Maintenance Services Department.
- Maintenance compliance of retention/detention ponds maintained by property owners has historically been reviewed by the City's Water Resources Planner.
- O&M of private storm drainage facilities is typically funded property owner through either CC&Rs and a homeowner's association or a Maintenance District managed by the City.
- Regarding street sweeping of City streets, commercial routes are swept weekly and residential routes are swept once every other week.
- The City maintains two full time sweepers, one reserve for additional sweeping duties and one older sweeper as a backup (2 regenerative air, 1 vacuum, and 1 mechanical).
- Storm drain inlets and catch basins are inspected and cleaned, as needed a once annually prior to the wet weather season. Additional cleaning takes place as a specific maintenance need is identified. Two hydro/vac trucks and 1 vacuum catch basin cleaner are available for this task.
- All major storm drain outfalls and detention basins are inspected annually. There currently is no routine inspection of storm drain trunk lines.
- Waste material from the City's street sweeping and storm drain cleaning operations is temporarily stored at the City Corporation Yard and loaded into dumpsters for disposal at the landfill.
- Chapter 29 (Article III) of the City Code provides the City the authority to inspect storm drain systems located on private property and conduct necessary maintenance when a problem is identified, public health and safety is compromised or the water quality of receiving waters is impaired, and the owner has not conducted the required maintenance.
- With respect to training and education on methods to reduce runoff, the Regional Board has held seminars that have been attended by City staff and the development community. APWA, CASQA, and other governmental and industry groups also offer webcasts and other training opportunities. In addition, the City is in the process of developing opportunities/brochures for planners, designers, owners and operators of new developments.

4.0 Document Review

Kennedy/Jenks reviewed a selected number of project relevant documents and ordinances to define the regulatory framework for current and proposed land development, drainage, flood control and storm water quality management in the City, the Salinas River watershed, and Monterey County. Documents were reviewed for compatibility with LID principles and practices and conformance with the requirements of the Salinas NPDES permit (Regional Board Order No. R3-2004-0135). The documents reviewed included the following:

- 4.1 The Central Coast Region Water Quality Control Plan (September 1994)
- 4.2 Regional Board Order No. R3-2004-0135 (February 2005)
- 4.3 Relevant portions of the Salinas Municipal Code (Draft and Adopted Sections)
- 4.4 The City of Salinas Standard Specifications, Design Standards and Standard Plans (2004 edition)
- 4.5 The Salinas General Plan (September 2002)
- 4.6 The City of Salinas Storm Drain Master Plan (May 2004)
- 4.7 The Salinas River Watershed Management Action Plan (October 1999)

With the exception of the Salinas General Plan and the adopted sections of the Salinas Municipal Code, which are available for review on the City's website, all of the above documents have been posted on the Project Web developed for this project (accessible at www.kennedyjenks.com). The project name is the "City of Salinas LID Standards" and Donette Dunaway and Carl Niizawa have been issued Usernames and Passwords.

Per the contract with the Regional Board, the draft Salinas Storm Water Management Plan (SWMP) was one of the documents that Kennedy/Jenks was planning to review. However, the draft Salinas SWMP was not available for review prior to the writing of the draft version of this memo (dated 4 August 2006). To date the draft Salinas SWMP remains in a state of flux with the Regional Board providing review comments and the City submitting revised sections. As discussed during a telephone conference call with the Regional Board and the City on 26 October 2006, it was decided that Kennedy/Jenks would not spend additional time reviewing and commenting on the draft Salinas SWMP as part of finalizing this memo.

4.1 The Central Coast Region Water Quality Control Plan (September 1994)

The Water Quality Control Plan (Basin Plan) was adopted in September 1994. Although there have been several basin plan amendments since that time, it does not appear that they affect the area around Salinas. Many of the topics identified in the Basin Plan (beneficial use, water quality objectives, etc.) are summarized within the NPDES permit (Order No. R3-2004-0135). The Basin Plan provides the foundation for applying "standards" to discharges in that the

purpose of the Basin Plan is to protect beneficial uses and water quality objectives. Storm water and many non-point source (NPS) discharges, however, are not required to meet specific water quality discharge limitations and are instead required to implement best management practices (BMPs). In fact, the Basin Plan specifies that:

> "The use of Best Management Practices (BMPs) does not necessarily ensure compliance with effluent limitations or with receiving water objectives. Because nonpoint source control has been a priority only since the 1970's, the long-term effectiveness of some BMPs (e.g. waste motor oil recycling) may be 100 percent effective if implemented properly. Monitoring and evaluation of BMPs is an important part of nonpoint source control programs."

The Basin Plan Section V.B identifies the need for the Regional Board to implement NPS management programs in partnership with Local agencies. Other portions of the Basin Plan are related to storm water management, urban runoff management, land disturbance activities, state and regional board policies (Chapter 5); and monitoring. The relevant elements of the Basin Plan are reflected in Order No. R3-2004-0135 as summarized in the following section.

4.2 Regional Board Order No. R3-2004-0135

The following sections present a summary of Regional Board Order R3-2004-0135 (NPDES Permit No. CA0049981, dated 4 February 2005), referred to hereinafter as the Salinas NPDES Permit. For convenience, simplified explanations of some of the regulatory/statutory text provided in the permit have been provided. In the even of a conflict, the text and definitions found in the Salinas NPDES Permit take precedence.

The Regional Board is the lead state agency responsible for protecting water quality in the Central Coast Region. The Regional Board has the authority to enforce regulatory policies and statutes under the Federal Clean Water Act, the California Porter-Cologne Water Quality Control Act and the Central Coast Regional Water Quality Control Plan as reviewed earlier.

The primary requirement of the Salinas NPDES Permit is the reduction in the rate and volume of urban runoff and the reduction of discharges of pollutants from the City's Municipal Separate Storm Sewer System (MS4 – as defined in Section 4.3.1.ii below) to the receiving Waters of the U.S. The City is required to reduce its discharges to the Maximum Extent Practicable (MEP - a standard defined in Section 4.3.1.ii below).

With respect to new development and significant redevelopment in the City, Attachment 4 to the Salinas NPDES Permit requires that short and long-term impacts on receiving waters to be minimized by the City's review and update of its existing planning and development program. Per Attachment 4 the City is required to implement the following measures:

1. Require developers to analyze pre-and post-project pollutant loads and peak flow rates, identify the Best Management Practices (BMPs) to be implemented;
2. Describe the BMPs in a Development Standards Plan (DSP);
3. Review and condition for compliance all "Priority Project Categories" and require the incorporation of structural and non-structural BMPs to mitigate the projected increases in pollutant loads and peak flow rates;
4. Minimize the amount and direct connection of impervious surfaces;
5. Infiltrate runoff on-site where appropriate soil conditions exist and where infiltration of storm water will not pose a potential threat to groundwater quality;
6. Implement pollution prevention and source control measures as a first line of defense;
7. Preserve, create or restore riparian corridors, wetlands and buffer zones;
8. Implement treatment controls where necessary and where pollution prevention and source control measures are not sufficient to protect receiving water quality.

To ensure that these planning and development requirements are implemented in the region, they should be discussed in all local documents relative to land development, drainage, flood control and surface water quality in the City, the Salinas River watershed, and Monterey County. These and other planning and development requirements will be addressed in detail in the Salinas DSP.

In response to additional questions about the definition of the MEP standard, the Regional Board stated that LID techniques meet the MEP definition because they are effective, feasible and economically practicable (22 December 2005 Regional Board letter to the City of Salinas – Appendix A). In addition, LID techniques disconnect impervious surfaces, facilitate infiltration, provide source control, preserve, create or and restore riparian corridors, wetlands and buffer zones, and can serve as treatment controls.

Per Section III of Attachment 4 to Regional Board Order R3-2004-0135, the City of Salinas is required to implement practices and policies that minimize the short and long-term impacts on receiving water quality from new development and significant redevelopment (defined as the creation or addition of at least 5,000 square feet of impervious surfaces on an already developed site). The Priority Project Categories noted above and discussed in detail in Attachment 4 (Section III.c.i.) include the following:

1. Residential developments with 10 or more units
2. Commercial developments that create 100,000 ft^2 or more impervious land area

3. Automotive repair shops (≥ 5,000 ft^2)
4. Restaurants (≥ 5,000 ft^2)
5. Hillside developments (≥ 5,000 ft^2)
6. Parking lots (≥ 5,000 ft^2)
7. Streets, roads, highways, and freeways that create 5 or more acres of pavement
8. Retail gasoline outlets (≥ 5,000 ft^2)

Furthermore, the City is required to develop and submit for public review and comment, and Regional Board approval, a DSP that describes the specific BMPs to be implemented in the Priority Project Categories noted above. Within one year of approval of the DSP, the City is required to amend, or adopt if needed, its own local Development Standards, including amendment of ordinances as needed.

Specifically the Salinas Development Standards Plan is required to include:

- A list of recommended source and treatment control BMPs
- Numeric sizing criteria for both volume- and flow-based treatment control BMPs
- A list of pollutants and activities of concern
- Restrictions to infiltration devices to protect groundwater quality
- Provisions to address the potential for downstream erosion and degradation of stream habitat

The required numeric sizing criteria must be applied to both volume- and flow-based treatment control BMPs in each Priority Project.

4.2.1 DSP: Volume-based Treatment Control BMPs

The Salinas NPDES Permit indicates that volume-based treatment control BMPs must be designed to infiltrate or treat the calculated volume obtained using one of the following methods:

a. The volume of runoff produced by the 24-hour 85th percentile storm event (based on local rainfall records) using the maximized storm water quality capture volume method (WEF/ASCE method, 1998);

b. The unit basin storage volume equivalent to 80% of the volume of annual runoff (CASQA method, 2003); or,

c. An approved equivalent numeric sizing criteria.

Examples of volume-based treatment control BMPs include extended detention basins, infiltration basins and trenches, and bioretention basins.

As presented in Appendix C, the rainfall depth associated with the 24-hour 85th percentile storm is 0.6 inches. The maximized storm water quality capture volume (WEF/ASCE method, 1998) for volume-based treatment control BMPs is as follows:

$$C = 0.858i^3 — 0.78i^2 + 0.774i + 0.04$$

$$P_o = (aC)P_6$$

Where

C = the runoff coefficient

i = watershed imperviousness ratio

P_o = maximized detention volume (inches)

a = regression constant for BMP draw down time (for 24 hours a = 1.582, for 48 hours a = 1.963)

P_6 = mean annual runoff producing rainfall depth based on local rainfall records (inches)

As noted above P_6 = 0.6 inches for the City of Salinas.

To determine 80% of the volume of annual runoff (CASQA method, 2003):

- Determine BMP drainage area (in ft^2)
- Calculate the composite runoff coefficient "C" for the drainage area using Rational Method "C" values
- Select the appropriate curve from Appendix D of the CASQA BMP Handbook (e.g. San Jose, 48-hr)
- Calculate required capture volume by multiplying BMP drainage area by Unit Basin Storage Volume

It should be noted that Salinas NPDES Permit indicates that volume-based treatment control BMPs can also be sized based on a fourth method, which reads as follows; "the volume of runoff produced from a 24-hour 85th percentile storm event, as determined from the local historical rainfall record." (Attach 4, III.c.iii.1.a). Since there is no indication of the appropriate computational method that should be applied to determine the volume, this fourth method is rather vague and may create a source of confusion for designers. In addition, the storm event criterion is the same as for the WEF/ASCE method noted above. Therefore, it is somewhat redundant. To prevent potential confusion, Kennedy/Jenks recommends that this method be

removed from the next permit and the Regional Board issues an addendum to the current permit to clarify the numeric sizing criteria for volume-based treatment control BMPs.

4.2.2 DSP: Flow-based Treatment Controls

The Salinas NPDES Permit indicates that flow-based treatment control BMPs must be designed to infiltrate or treat the maximum flow rate produced by a rain event equal to two times the 85th percentile hourly rainfall intensity based on local rainfall records (CASQA method, 2003). An approved equivalent numeric sizing criteria can also be adopted by the City. Examples of flow-based treatment control BMPs include swales and buffer strips.

The CASQA method utilizes the commonly applied Rational Formula (Q = CIA):

Where

Q = flow rate (ft^3/sec)

C = the runoff coefficient

I = rainfall intensity (inches/hour)

A = drainage area (acres)

As presented in Appendix C, the rainfall intensity associated with the 24-hour 85th percentile storm is 0.10 inches/hour. Therefore two times the 85th percentile hourly rainfall intensity is 0.20 inches/hour.

It should be noted that the Salinas NPDES Permit indicates there are two methods that can be used to size flow-based treatment control BMPs (Attach 4, III.c.iii.2.a and 2.b). However the two methods appear to be identical and Kennedy/Jenks recommends that only one method be specified or this section be reworded in the next permit so that method 2.a) and 2.b) can be distinguished as different from each other. To prevent potential confusion, Kennedy/Jenks recommends that the Regional Board also clarifies the numeric sizing criteria for flow-based treatment control BMPs in the addendum discussed in the previous section.

4.2.3 DSP: Target Pollutants and Groundwater Quality

As noted previously, the Salinas Development Standards Plan (DSP) is required to list the pollutants and activities of concern. Specifically, when selecting BMPs the DSP shall consider:

1. Target pollutants
2. Pollutants associated with different land uses
3. Post-development changes in flow rates and volumes
4. Sensitivity of receiving waters to changes in flow rates and volumes

Local pollutants of concern include:

- Fecal Coliform and Nitrate (per 303(d) list)
- TDS, Cl, CO_4, B and Na (per Water Quality Objectives for the Salinas River and the Gabilan Tributary, Central Coast Regional Water Quality Control Plan, 1994)
- Sediment from construction sites

The DSP shall also consider infiltration and groundwater quality. Restrictions on infiltration devices may include the following:

- Must be located 150 ft or more from drinking water wells
- Not to be used at industrial or commercial sites with outdoor storage or materials and/or chemicals
- Native soil infiltration rates shall be between 0.5 to 2.4 in/hr (120 to 25 min/in)
- When using infiltration basins and trenches, storm water should be pretreated for sediment removal prior to infiltration. Pretreatment methods typically include up gradient vegetated swales or buffer strips (additional design information can be found on the infiltration basins and trenches fact sheet in the draft DSP).

4.2.4 DSP: Implementation

For the DSP implementation process, the Salinas SWMP should address the following:

1. Describe the implementation schedule and milestones
2. Identify the roles and responsibilities of various City municipal departments
3. Identify any other measures necessary for implementation

4.2.5 DSP: Maintenance Agreements

The DSP must also address BMP maintenance agreements and the transfer of maintenance agreement responsibilities when land ownership changes occur. The City of Salinas shall require verification of maintenance provisions for post-construction treatment control BMPs by implementing the following measures:

1. Require developers to maintain BMPs until legally transferred to another party; or
2. Sales or lease agreement includes recipients requirements for maintenance; or
3. Project conditions or CC&R's for residential developments assign maintenance responsibilities to HOA or other appropriate group; or
4. Any other legally enforceable agreement other legally enforceable agreement.

The City currently utilizes Maintenance Assessment Districts to fulfill the maintenance obligations for storm drain system facilities including detention/retention ponds. Maintenance Assessment Districts provide the primary "vehicle" used by private property owners to fund storm drain system maintenance. They ensure the maintenance obligations are fulfilled for the City and provide an economically viable way for the community to most efficiently finance their maintenance responsibilities.

4.2.6 DSP: Other Regulatory Requirements

The other Development Standard requirements the City is required to address include:

a. Incorporation into its CEQA process an evaluation of potential impacts from development on storm water runoff and receiving water bodies;

b. An update of the Salinas General Plan or equivalent plans (e.g., Comprehensive, Master, Community, and/or Specific Plans) as necessary to include the 8 watershed and storm water quality and quantity principles (noted above) into City planning procedures and policies;

c. Annual training requirements for development planning staff; and,

d. Provisions to provide new development standards to developers as they are adopted.

As discussed during the 20 December 2006 telephone conference call with the Regional Board and the City, the above items should be addressed in the City's SWMP.

4.2.7 DSP: Other Regulatory Requirements

The City may propose a waiver program that would require developers to transfer cost savings to a storm water mitigation fund subject to the following:

1. Proof that the project will improve storm water quality and protect stream habitat;
2. Proof that the DSP-required source or treatment control BMPs are infeasible; and/or
3. Design approval by the Regional Board Executive Officer prior to construction.

It should be noted that the "waiver program" option will likely require negotiations with the Regional Board, the City, and its developers and designers.

4.3 The Salinas Municipal Code – Selected Sections

There are portions of the Salinas Municipal Code that are applicable to LID. Some of the sections are draft and were reviewed in their current draft states while others are as adopted by the City of Salinas. Draft sections included the following:

4.3.1 The City of Salinas draft revised Storm Water Ordinance (dated June 26, 2006)

4.3.2 The City of Salinas draft revised Grading Ordinance (dated June 19, 2006)

4.3.3 The City of Salinas Draft Zoning Code Update (dated August 2005)

When reviewing the comments in the subsections 4.3.1, 4.3.2 and 4.3.3, the reader is encouraged to cross reference the associated ordinances posted on the Project Web. Following the review of the draft ordinances noted above, Section 4.3.4 presents a review of selected adopted portions of the Salinas Municipal Code.

4.3.1 The City of Salinas draft revised Storm Water Ordinance (dated 26 June 2006)

i. General Comment

Enactment of new Section 29 is assumed to replace current Section 29 of the City of Salinas Municipal Code. New Section 29 is also assumed to be in addition to (not in lieu of or in replacement of) current Section 29A – Storm water Management Utility. The previous version of Section 29 was not reviewed.

ii. Section 29-3 Definitions

Maximum Extent Practicable (MEP)

(ee) "Stormwater Management Program" includes the term Maximum Extent Practicable (MEP). A definition of MEP would be useful. A suggested definition could be taken from Regional Board Order R3-2004-0135. The Regional Board's definition of MEP is as follows:

> "MEP is generally a result of emphasizing pollution prevention and source control BMPs as the first lines of defense in combination with structural and treatment methods where appropriate serving as additional lines of defense. The MEP approach is an ever evolving, flexible, and advancing concept, which considers technical and economic feasibility. For purposes of this Permit, the Regional Board will determine compliance with MEP standards based on the terms of the Permit, including Attachment 4; and State Board decisions or guidance, EPA regulations and guidance and applicable case law defining MEP." (Salinas Order, Finding 16, emphasis added by Regional Board 12/23/05 in letter to City.)

In addition, the definition should include some of the additional language noted in the December 22, 2005 Regional Board letter to the City of Salinas (Appendix A) that indicates that LID techniques implemented in new development meet the MEP definition.

The City has indicated they prefer the MEP definition, as defined by the National Association of Flood and Stormwater Management Agencies (NAFSMA) in their 2002 Position on Municipal Stormwater Management Program. NAFSMA's definition of MEP is: "the technically sound and

financially responsible, non-numeric criteria applicable to all municipal stormwater discharges through the implementation of BMPs." However, this definition of MEP may not be acceptable to the Regional Board because numeric sizing criteria is required in the Salinas NPDES Permit.

MEP, as described by the State Water Resources Control Board, includes the following:

"The federal Clean Water Act (CWA) provides that NPDES permits for Municipal Separate Storm Sewer Systems (MS4) must require municipalities to reduce pollutants in their storm water discharges to the MEP. (CWA §402(p)(3)(B).) MS4 permits "shall require controls to reduce the discharge of pollutants to the maximum extent practicable, including management practices, control techniques and system, design and engineering methods." (Id.)"

"The MEP standard involves applying best management practices (BMPs) that are effective in reducing the discharge of pollutants in storm water runoff. In discussing the MEP standard, the State Board has said the following: "There must be a serious attempt to comply, and practical solutions may not be lightly rejected. If, from the list of BMPs, a permittee chooses only a few of the least expensive methods, it is likely that MEP has not been met. On the other hand, if a permittee employs all applicable BMPs, except those where it can show that they are not technically feasible in the locality, or whose cost would exceed any benefit to be derived, it would have met the standard. MEP requires permittees to choose effective BMPs, and to reject applicable BMPs only where other effective BMPs will serve the same purpose, the BMPs would not be technically feasible, or the cost would be prohibitive." (Order No. WQ 2000-11, at p.20.) MEP is the result of the cumulative effect of implementing, continuously evaluating, and making corresponding changes to a variety of technically and economically feasible BMPs that ensures the most appropriate controls are implemented in the most effective manner. This process of implementing, evaluating, revising, or adding new BMPs is commonly referred to as the iterative approach (see question 4 of small MS4 FAQ). For Small MS4s, EPA has stated that pollutant reductions to the MEP will be realized by implementing BMPs through the six minimum measures described in the permit. (64 Federal Register 68753.) http://www.waterboards.ca.gov/stormwtr/smallms4faq.html"

Municipal Separate Storm Sewer System (MS4)

The Salinas NPDES Permit includes the term Municipal Separate Storm Sewer System (MS4) numerous times and definitions of MEP often include the MS4 acronym. Therefore a definition of MS4 is recommended in the Salinas draft revised Storm Water Ordinance. A suggested definition, that could be taken from 40 CFR 122.26(b)(8), is as follows:

"The Municipal Separate Storm Sewer System (MS4) is a conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned and operated by a state, county, city, town, district, association, or other public body (created by or pursuant to state law) having

jurisdiction over the disposal of sewage, industrial wastes, storm water, or other wastes, that discharges to waters of the United States."

iii. City Engineer

Consider replacing "City Engineer" in the following sections:

Section 29-3 Definitions (c), (k)
Section 29-4
Section 29-10 (b)
Section 29-15 (d)(4)(v), (f)(1), (f)(2), (f)(3), (g)(3)
Section 29-24
Section 29-28

with the following (or similar language):

"The City Engineer, or the City Engineer's designated representative(s) is charged with the administration of and compliance with this ordinance regulation, as established by the City. The City Engineer is empowered to establish such administrative and physical procedures and guidelines as are required in the execution of his/her authority under this ordinance."

iv. Section 29-8 Effective Date

It would be helpful to also indicate a renewal schedule and/or expiration schedule if one exists. Alternatively, it could be indicated that a renewal schedule and/or expiration schedule does not exist.

v. Section 29-15

Enumeration goes from (d) to (f)…need to add section (e)

4.3.2 The City of Salinas draft revised Grading Ordinance (dated 19 June 2006)

The grading ordinance code is the primary mechanism the City can use to set forth guidelines, rules, regulations and minimum standards to control excavation, grading, clearing, erosion, and maintenance. The Salinas draft revised Grading Ordinance (dated 19 June 2006) includes a number of requirements that are consistent with the Salinas NPDES Permit. They include the following:

- The control of existing and potential new conditions of accelerated erosion
- The required protection of surface water quality by prevention of soil erosion and transport of soil sediments or other pollutants

- Administrative procedures for issuance of permits
- Procedures for approval of plans
- Required inspections during construction and maintenance
- Conformance with the applicable requirements of the State of California General Storm Water Permit for Discharges from Construction Activities

Section III of Attachment 4 to Order R3-2004-0135 sets forth eight development standards toward consistent implementation of water quality protection measures for all development practices:

1. Minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and use on-site infiltration of runoff in areas with appropriate soils where the infiltration of storm water would not pose a potential threat to groundwater quality. (Attach. 4, Section III.a.i.1)
2. Implement pollution prevention methods supplemented by pollutant source controls, and if source controls are not practicable, by treatment controls. Where practical, use strategies that control the sources of pollutants or constituents to minimize the transport of storm water and pollutants offsite and into MS4s. (Attach. 4, Section III.a.i.2).
3. Preserve and, where possible, create or restore areas that provide important water quality benefits, such as riparian corridors, wetlands and buffer zones. (Attach. 4, Section III.a.i.3).
4. Limit disturbances of natural water bodies and natural drainage systems caused by development within the City's jurisdictional authority, including roads, highways, and bridges. (Attach. 4, Section III.a.i.4).
5. Require developers to prepare and submit studies analyzing pre- and post-project pollutant loads (including sediment) and flows resulting from projected future development. Require incorporation of structural and non-structural BMPs to mitigate the projected increases in pollutant loads in runoff. (Attach. 4, Section III.a.i.5).
6. Identify, minimize, and regulate development in areas that are particularly susceptible to erosion and sediment loss, or establish development guidance that protects areas from erosion and sediment loss. (Attach. 4, Section III.a.i.6).
7. Implement source and treatment controls as necessary to protect downstream water quality from increased pollutant loads in runoff from new developments and significant redevelopment. (Attach. 4, Section III.a.i.7).
8. Control the post-development peak storm water runoff discharge rates and velocities to prevent or reduce downstream erosion, and to protect stream habitat (Attach. 4, Section III.a.i.8).

The Salinas NPDES Permit requires the City to incorporate the above development standards into the Salinas General Plan and other planning procedures and policies such as Comprehensive, Master, Community, and Specific Plans (and the Salinas DSP).

Table 1 compares the eight requirements above to the 19 June 2006 version of the Salinas draft revised Grading Ordinance. The table identifies portions of the ordinance that support LID and the permit requirements noted above and provides suggested ordinance clarifications, modifications and expansions (*in underlined italicized text*). When reviewing Table 1, the reader is encouraged to also review the 19 June 2006 version of the Salinas draft revised Grading Ordinance posted on the Project Web. Cross referencing the ordinance will assist the reader with understanding the context of the comments provided below.

Table 1: Comments and Suggested Modifications to the City of Salinas draft revised Grading Ordinance (dated 19 June 2006)

Grading Ordinance Section	Topic	Comments and *Suggested Modifications*	Permit Requirements (above)
3.1	General Provisions	The code prohibits any person from causing or allowing accelerated erosion.	6
3.2	General Provisions	The code supports the protection of natural storm water flow and preservation of natural drainage ways.	3, 4
3.3	General Provisions	The code protects riparian corridors and wetlands through minimum 100-ft setbacks. Developments must retain creeks and wetlands in their natural channels. It discourages the use of culverts or underground pipes and requires a riparian/wetland habitat mitigation and management plan if impacts are incurred to such waterways during development. *This section could be strengthened by noting that implementation of LID can help to mitigate impacts.*	3, 4
3.5	General Provisions	The code notes that the person(s) and/or property owner(s) directing grading is responsible for protecting down-stream areas on or near the site. Short-term erosion and sediment control BMP manual references are provided. *This section could be strengthened by referencing long-term protection measures such as LID techniques that limit down-stream hydromodification.*	3, 4
3.6	General Provisions	The code notes that the person(s) and/or property owner(s) directing grading is responsible for implementing and maintaining BMPs to protect adjacent water courses. *This section could be strengthened by specifying both short-term and long-term BMPs.*	3, 4

Grading Ordinance Section	Topic	Comments and ***Suggested Modifications***	Permit Requirements (above)
3.7, 3.8, 3.9	General Provisions	The code outlines the required procedures and required short-term erosion and sediment control BMPs to be implemented during construction. *This section could be strengthened by requiring long-term protection measures such as LID techniques*.	2
4	Hazardous Conditions	The code limits the use of long-lived soil sterilants and requires the correction of erosion and soil sterility problems before the beginning of the next rainy season.	2
6.2	Permit Applications and Requirements - Plans and Specifications	The permit application process provides measure that can be used to support LID and NPDES permit requirements such as; e) a comparison of runoff with project and without project and f) detailed drawings of drainage devices and sediment controls. *This section could be strengthened by requiring developers to also estimate pre- and post-project pollutant loads and indicate the design measures used to minimize new impervious surfaces and encourage on-site infiltration*	1, 5
6.5	Permit Applications and Requirements – Engineering Reports	The code requires calculation of runoff for 10-year and 100-year storm and a description of site geology and potential geologic hazards. *This section could be strengthened by requiring calculations of pre- and post-project pollutant loads and a discussion of site feasibility for infiltration of storm water*.	5, 6
9	Design Standards for Excavations	2) Slope - Cut slopes shall be no steeper than 2 horizontal to 1 vertical (2H:1V). *Maximum 3H:1V slopes are preferable where feasible to reduce erosion potential*. 4) Vegetative Protection - earth cuts must be revegetated within 30 days and plantings shall be irrigated if necessary to establish root system before rainy season. *Use of native drought tolerant plants could be encouraged and a note that alternatives to plantings will be allowed upon City approval.*	2
10	Design Standards for Fill	3) Fill Slopes - *Maximum 3H:1V slopes are preferable* 5) Materials Permitted – *Soil amendments that increase absorption of storm water and reduce erosion could be added*. 7) Vegetative Protection - *Use of native drought tolerant plants could be encouraged*.	2
11	Design Standards for Cut And Fill Setbacks	3) Stream and Riparian Setbacks – references Section 3.3 above and encourages additional erosion control measures to protect riparian corridors	3

Grading Ordinance Section	Topic	Comments and ***Suggested Modifications***	Permit Requirements (above)
12	Design Standards for Drainage and Terraces	Requires compliance with Salinas NPDES permit. *This section could be strengthened by requiring compliance with the LID drainage design standards provided in the current version of the Salinas DSP.*	1-8
13	Design Standards for Erosion and Sediment Control	Grading plans shall be designed with long-term erosion and sediment control as a primary consideration. No grading shall take place during the rainy season (October 15th – April 15th).	2
13.2	Design Standards for Erosion and Sediment Control	Erosion and Sediment Control Plans are required for all construction projects of one acre or more that must submit a SWPPP. The Plans shall provide a) all planned temporary and permanent erosion and sediment control measures, design and application specifications, a maintenance schedule; a d) an effective revegetation program; and, f) a BMP inspection and repair program.	2
13.3.a	Design Standards for Erosion and Sediment Control	Access and building envelopes shall be delineated on the development plans when necessary to keep disturbance out of particularly erodible areas.	6
13.3.f	Design Standards for Erosion and Sediment Control	Runoff from buildings, roads, driveways and the total site area shall be controlled by berms, swales, ditches, structures, vegetative filter strips and/or catch basins to adequately reduce the escape of sediment from the site. These provisions support and encourage LID. *This section could be strengthened by adding onsite bioretention systems to capture, detain, treat and reduce runoff.*	1
13.7.b	Design Standards for Erosion and Sediment Control	Runoff from buildings, roads, driveways and the total site area shall be controlled by berms, swales, ditches, structures, vegetative filter strips and/or catch basins to adequately reduce the escape of sediment from the site. These provisions support and encourage LID. *This section could be strengthened by adding onsite bioretention systems to capture, detain, treat and reduce runoff.*	1

It should be noted that the Salinas draft revised Grading Ordinance primarily supports NPDES permit requirements related to the planning, implementation, tracking, inspection, maintenance, and enforcement of construction site BMPs. With the minimal revisions noted in Table 1, the ordinance could be strengthened to also support LID and the development standard requirements of Attachment 4.

4.3.3 The City of Salinas Draft Zoning Code Update (dated August 2005)

The Zoning Code is a principle means of communication that the City can use to implement the requirements of the Salinas NPDES permit and the General Plan. The Zoning Code regulates the type, location, density, and design of development in the City. Zoning must be consistent with a community's general plan.

Table 2 below summarizes the portions of the Draft Zoning Code Update that support or allow LID principles and practices. The table identifies portions of the code that support LID and the Salinas NPDES permit requirements and provides suggested ordinance clarifications, modifications and expansions (*in underlined italicized text*). The City should consider addressing these comments during the next code revision/update process.

When reviewing Table 2, the reader is encouraged to cross reference the Draft Zoning Code Update (dated August 2005) posted on the Project Web. Cross referencing this version of the code will assist the reader with understanding the context of the comments provided in the table. It should be noted that the Draft Zoning Code Update is currently outdated. It was revised by the City, adopted by the City Council on 7 November 2006 (Ordinance 2463) and became effective on 7 December 2006. Therefore, some of the code sections noted in Table 2 below may not match the section numbering in the adopted version of the code. However, the comments remain applicable and those identified by an asterisk (*) may be applied to other sections of the zoning code pertaining to the same subject in different Base Districts.

Table 2: Comments and Suggested Modifications to the City of Salinas Draft Zoning Code Update (dated August 2005)

Zoning Code Section	Topic	Comments and *Suggested Modifications*
37-30.080(c)	Commercial District Regulations - Site Planning*	Code promotes clustering of new structures and clustering of open space areas into larger landscaped areas. *This section could be strengthened to support NPDES permit compliance and LID by noting that clustering can facilitate the creation of areas for on-site storm water management practices*.

Zoning Code Section	Topic	Comments and ***Suggested Modifications***
37-30.080 (k)(3)	Commercial District Regulations - Parking and Circulation*	Common driveways and shared parking are encouraged. *This section could be strengthened to support LID by noting that common driveways help to minimize the amount of impervious surfaces and reduce runoff.*
37-30.080 (k)(4)	Commercial District Regulations - Parking and Circulation*	Code requires that parking areas shall be landscaped on the interior and perimeter. *The code could also include a discussion about the possibility of combining interior landscape and shade tree coverage to meet LID objectives. This can provide for on-site LID practices, particularly for runoff from the paved parking areas*.
37-30.140 (q)	Mixed Use District Regulations – Design Standards - Parking*	Landscape requirements in parking areas support the LID principles. *This section could be strengthened to support LID by noting that landscaped areas can be used for on-site storm water management practices such as vegetated swales and bioretention systems. It could also note that porous pavements can be used, particularly at overflow parking areas. .*
37-30.140 (r)	Mixed Use District Regulations – Design Standards - Landscaping	*This section could be strengthened to support LID by noting that landscaped areas can be used for on-site storm water management practices such as vegetated swales and bioretention systems*
37-30.140 (s)	Mixed Use Building Standards - Useable Open Space	*This section could be strengthened to support LID by noting that buildings can be clustered to create useable pedestrian areas and common spaces that also support on-site storm water management practices.*
37-30.190 (i)(5)	Industrial Design Standards*	Trees should be located throughout the parking lot. The Standard provides the criteria for determining which trees qualify as being *within* the parking lot. *This section could be strengthened to support LID by noting that on-site drainage into tree wells is permissible per the guidelines noted in the DSP*.
37-30.200	Parks District and Open Space	Provides for the preservation and protection of creeks and natural resources. *This section could be strengthened to support LID by noting that parks and open spaces can be used for storm water management practices.*
37-30.270	New Urbanism *	*This section could be strengthened to support LID by noting that on-site storm water management practices, designed per the guidelines noted in the DSP, should be included in the design.*
37-30.310 (f)	Streets and Streetscape Design: Traffic Calming Features	*This section could be strengthened to support LID by noting that traffic calming features can also serve to provide space for storm water management practices such as bioretention systems.*

Zoning Code Section	Topic	Comments and ***Suggested Modifications***
37-50.110 (b)	Special Regulations: Home Occupation - Permit Required	A Home Occupation Permit from Community Planning and Development is required to operate any home occupation. *The permit process could be strengthened to support LID by including requirements to operate and maintain all on-site storm water management practices.*
37-50.110 (d)	Special Regulations: Home Occupation - Operating Standards	*In addition to the regulations listed, this section could be strengthened to support LID by requiring that all on-site storm water management practices be maintained per an approved maintenance agreement.*
37-50.410(d)	Application of Parking Space Dimensional Requirements	Allows for no curb between a parking space and landscape area, provided that the planter is extended 3' for the parked car to overhang. *This section could be strengthened to support LID by noting that the landscape area can be used for storm water management by designing the grade to be below the adjacent impervious parking surface.*
37-50.450	Driveways	Driveway width for 1 to 3-car garage minimum of 10 ft width. *This section could be strengthened to support LID by adding a maximum width for driveways to minimize paving and impervious surfaces and/or encouraging use of permeable materials.*
37-50.520 (b)	Parking Design Standards - General Design Principles	*This section could be strengthened to support NPDES permit compliance by adding "(9) Good drainage and storm water treatment as required per the current Salinas NPDES storm water permit."*
37-50.520(k)	Parking Design Standards - Landscaping	*This section could be strengthened to support NPDES permit compliance and LID by adding "(10) When possible, landscaping should be designed to accept runoff from the adjacent impervious parking area. Landscaped areas designed to accept runoff should be designed per the design standards noted in the current DSP."*
37-50.680	Landscape and Irrigation - Purpose	The code notes that one of its purposes is to minimize impervious surfaces and meet Federal, State, and local water quality regulations such as the NPDES permit requirements. *The City could add a note that landscaping can be used to improve water quality by controlling erosion and reducing runoff. Wherever possible, landscaped areas should be utilized to accept runoff, filter pollutants and reduce the rate, volume and temperature of urban runoff.*
37-50.690 (c)	Landscape and Irrigation - Development Regulations	The code notes that all new development shall apply xeriscape principles including techniques and materials such as native or low water use plants and low precipitation irrigation devices. *This section could be strengthened to support LID by adding "(4) When possible, landscaping should be designed to accept runoff from the adjacent impervious surfaces." and "(5) Landscaped areas designed to accept runoff should be designed per the design standards noted in the current DSP."*

Zoning Code Section	Topic	Comments and ***Suggested Modifications***
37-50.690 (e)(1)	Landscape and Irrigation - Materials	The code notes that plant materials are to be chosen for their energy efficiency and drought tolerance and adaptability in relationship to the Salinas environment. *The City could add a note that plant materials should be selected from the Salinas Planting Zone and Plant List for LID Practiced provided in the current DSP.*
37-50.690 (e)(2)	Landscape and Irrigation - Materials	The code requires bark chip mulch and/or approved alternatives to top-dress non-turf planting areas. This requirement will improve water retention and the permeability of soils. *This section could be strengthened to support LID by adding "(4) Where appropriate, soils should be amended with sand and compost to increase the infiltration capacity of the soils and to reduce runoff.*
37-50.700 (b)	Landscaping Design Standards	The code notes that landscaping and open space are to be designed as an integral part of the overall site plan and design. *"Site infiltration" should be added to the landscape design standards objectives. Groundcover (low-water/low maintenance) should be encouraged and can provide better treatment than mulch. This section could be strengthened to support the NPDES permit requirements and the implementation of LID by adding "(9) When possible, landscaping should be designed to accept runoff from the adjacent impervious surfaces and reduce the volume, rate and pollutant loading of urban runoff as required in the Salinas NPDES permit." and (10) Landscaped areas designed to accept runoff should be designed per the design standards noted in the current DSP."*
37-50.700 (c)	Landscaping Design Standards - Xeriscape Guidelines	The code encourages the minimization of turf and suggests that turf should be excluded from hard to irrigate places such as medians and sidewalk strips. *The City could add a note that plant varieties should be selected from the Salinas Planting Zone and Plant List for LID Practiced provided in the current DSP.*

* Indicates comments that may apply to other sections of the zoning code pertaining to the same subject in different Base Districts.

4.3.4 Adopted Sections of the Salinas Municipal Code

Table 3 below identifies selected adopted sections of the Salinas Municipal Code that support the eight NPDES permit required development standards listed in Section 4.3.2 above. Table 3 also provides suggested ordinance clarifications, modifications and expansions (*in underlined italicized text*) that the City should consider during the next code revision/update process. The Salinas Municipal Code can be accessed on the City's website.

Table 3: Comments and Suggested Modifications to Selected Adopted Sections of the Salinas Municipal Code

Chapter	Section	Topic	Comments and ***Suggested Modifications***	Permit Requirements (Sec 4.3.2)
9 - Buildings	9-1.3. Amendments to the California Building Code Appendix	Appendix Chapter 33, Excavation and Grading. Section 3301--PURPOSE	The purpose of this Chapter is to safeguard health, safety and the public welfare; to protect fish and wildlife and riparian corridors and habitats, domestic and industrial water supplies, private and public property, and to otherwise protect the natural environment from the effects of flooding, accelerated erosion and/or siltation by establishing minimum standards for excavations, cuts, fills, clearing, earthmoving, grading, erosion, and sediment controls.	1-8
29 - Sewers	29-3	Definitions	"City storm sewer drainage system," *The definition could include storm water treatment facilities and LID practices (swales and bioretention basins) or manufactured devices (hydrodynamic separators and underground vaults). It could also include definitions for detention, retention and infiltration of storm water.*	7, 8
29A - Stormwater Management Utility	3.h.	Drainage facilities	Grading plans shall be designed with long-term erosion and sediment control as a primary consideration.	2, 7, 8
30 - Streets and Sidewalks	30-31	Maximum Paving	Places limits on the amount of impervious pavement to be installed within vegetated parkways. *Parkways can also be used for storm water management/LID practices (e.g. swales and bioretention) with paved surface grading directing water to vegetated strips. The code should also allow curb cuts and promote the use of discontinuous curbs to promote LID.*	1

Chapter	Section	Topic	Comments and ***Suggested Modifications***	Permit Requirements (Sec 4.3.2)
30 - Streets and Sidewalks	30-32	Maximum Paving	A minimum of 10% of all parking and loading areas should be devoted to interior landscaping. *Interior landscaping can be used for storm water management/LID practices (e.g. swales and bioretention)*.	1
30 - Streets and Sidewalks	30-33	Permissible Materials; Grading	Code allows for parkways to be paved with porous materials such as brick, stone or bark. *Could also support the use the use of pervious pavement.*	1
31 - Subdivisions	31-602.8	Credit for dedication of open-space with park-like features	Code allows for crediting neighborhood and community park credits to improvement of open spaces that are developed with park-like features and are permanently available and accessible for public use. *This section could be strengthened to support LID by encouraging the implementation of LID practices in park settings.*	7, 8
31 - Subdivisions	31-802.2	Storm Drainage	Code allows for both onsite and offsite storm drain improvements. The storm drain system shall provide for the protection of abutting and off-site properties that would be adversely affected by any increase in runoff attributed to the development. *This could be accomplished by implementing onsite LID practices.*	7, 8
35 - Trees and Shrubs	35-12	Injurious substances around trees, etc. prohibited	Code prohibits placement of stone, concrete, or other substance that will impede the free access of water to tree, plant or shrub in any street parkway or alley. *These tree planters can be used for storm water treatment. An additional clause could prohibit pollarding or topping of trees (street and parking lot) to retain shading quality of trees.*	7, 8

Chapter	Section	Topic	Comments and ***Suggested Modifications***	Permit Requirements (Sec 4.3.2)
35 - Trees and Shrubs	35-12	Injurious substances around trees, etc. prohibited	Code prohibits substances deleterious to trees from leaking, dripping or flowing into the tree in streets, parkways, or alleys in the city. *This provision may conflict with LID if it implies that drainage should be directed away from trees and planted areas. If so, it should be modified*.	7, 8

4.4 The City of Salinas Standard Specifications, Design Standards and Standard Plans (2004 edition)

The following presents a review of the selected sections of the City of Salinas Standard Specifications, Design Standards, and Standard Plans for conformance with LID principles and practices.

4.4.1 Part I Section 20 - Landscape and Irrigation

The landscape and irrigation specifications do not directly conflict with LID. However, as the current specifications are written, they do not support or encourage the proliferation of LID in the City of Salinas. The largest hindrance to the LID techniques is the assumed installation of typical curb and gutter construction around landscape areas.

The current landscape specifications meet the requirements for LID in soil permeability rates, by requiring that landscape grading (and/or irrigation) do not cause surface erosion, and by requiring that planting areas are below the grade of the surrounding hardscape surfaces. This section does provide specifications for planting areas to function as drainage basins, describe sub-surface overflow drainage features, or soil mixtures for increasing storm water infiltration. Likewise, there are specific statements that could be revised in respect to LID intentions. For example, the statement that ground cover plants are to be kept out of planters (p. 57) could be revised to encourage integrated planting designs that promote infiltration and evapotranspiration and discourage barren soils, erosion, and sedimentation.

A specification sub-section could be added to explicitly support LID planting areas. The sub-section could address soil mixtures to meet the drainage requirements for large volumes of water. The use of curb cuts, curbless streets, and grading should be considered. A discussion of the plants and materials appropriate for infiltration basins, grassy swales, and tree box filters will help applicants and the planning staff to achieve the goals of the NPDES permit.

4.4.2 Part II Section II – Storm Drain Design

A. GENERAL – This section currently states that "the storm drainage system shall follow natural drainage patterns as much as possible." It could be strengthened to further support LID by adding text that indicates BMPs designed to reduce the rate, volume and pollutant loading of urban runoff shall be incorporated into new development and redevelopment to the MEP per the designed standards provided in the current version of the Salinas DSP.

B. DESIGN STORM – This section could be strengthened to support LID and compliance with the Salinas NPDES Permit by adding text similar to the following: "Design techniques and on-site facilities designed to reduce the rate, volume and pollutant loading of urban runoff prior to discharge to the City's storm drain (e.g. BMPs and LID practices) shall be incorporated into all new development and redevelopment projects. Design storms for storm water quality BMPs are based on the most frequently occurring, relatively small storm events (e.g. less than the 2-year storm). Priority Projects shall apply the Salinas NPDES Permit required numeric sizing criteria to the design of volume- and flow-based treatment control BMPs. Information on Priority Project categories, the required numeric sizing criteria, BMPs, LID practices, and treatment controls is presented in the current version of the Salinas DSP."

C. HYDROLOGY – SURFACE RUNOFF – The "Infiltration Rates" table in this section currently notes that the several soil types within the City have infiltration rates that could potentially support storm water infiltration practices (e.g. the table notes that Sandy xerothents and Arroyo Seco gravelly loams have rates ranging from 2.0 to 6.0 in/hr and Chualar loams and Elder sandy loams, from 0.6 to 2.0 in/hr). This section could be strengthened to support LID by adding a note that storm water infiltration practices, designed per the criteria presented in the current version of the Salinas DSP, could potentially be constructed in these soils. It should also note that infiltration testing, conducted at the location of proposed infiltration practices, may be required. In addition, the potential threat to groundwater quality must be assessed.

D. HYDRAULIC CONSIDERATIONS – A paragraph could be added to this section discussing underdrains in storm water treatment control BMPs, such as the bioretention systems and vegetated swales presented in the current version of the Salinas DSP. The paragraph could discuss acceptable pipe materials (e.g. min 4-inch diameter SCH 40 PVC), minimum pipe slope, and standard designs for connecting underdrains to the conventional storm drain system.

F. DETENTION/RETENTION REQUIREMENTS – This section notes that detention/retention basins shall incorporate storm water quality features consistent with the design guidance provided in the CASQA California Stormwater BMP Handbook for New Development and Redevelopment (January, 2003). The City should consider changing the reference to "the current version" of the CASQA BMP Handbook and also adding a reference to the current version of the Salinas DSP.

G. STORMWATER QUALITY CONSIDERATIONS - This section states that storm drainage system design shall be in compliance with the Salinas NPDES Permit and the Salinas Storm Water Ordinance. It further states that the CASQA California Stormwater BMP Handbook for New Development and Redevelopment (2003 or current version) shall be used as the basis for selection and design of BMPs for storm water quality. This section should also reference to the current version of the Salinas DSP. In addition, the wording of the Salinas NPDES Permit and the Salinas Storm Water Ordinance should be consistent throughout the document.

This section also states that source control BMPs shall be incorporated into the design of storm drainage as needed to control sources of potential pollutants. It references the source control BMPs described in the California Stormwater BMP Handbook and provides a list of the general categories of source control BMPs from the handbook (no details are provided). This section should be updated to be consistent with the current version of the California Stormwater BMP Handbook for New Development and Redevelopment which includes source control BMP fact sheets for Pervious Pavement and Alternative Building Materials. In addition, "Storm Drain System Stenciling" should be changed to "Storm Drain Signage" to more accurately reflect the available options for this source control BMP. Preceding the "SOURCE CONTROL BMPS FOR DESIGN" table on page 136 is a paragraph on page 135 that states that "All catch basins and inlets shall be clearly marked with the message **"NO DUMPING - DRAINS TO THE BAY,"** using City-approved methods. However, there is no indication of what are the City-approved methods (stenciling, stamping, placards, etc). In addition to providing this information, this paragraph could be moved after the source control table with a note added that the "Storm Drain Signage" BMP should be implemented in the City as follows: "All catch basins and inlets shall be…"

This section also discusses "TREATMENT CONTROL BMPS FOR DESIGN" and presents the City's preferred applicability for several treatment controls measures. Upon adoption of the Salinas DSP, the City should consider revising this section to be consistent with the policies and procedures presented in the DSP (or remove this section and reference the DSP). For example, this section currently states that "Detention Basins or Extended Detention Basins shall be the City's preferred treatment control measure for large drainage areas." This policy may change as the City becomes familiar with the implementation of more effective LID practices, such as bioretention systems. The applicability of "Infiltration Only Basins/Trenches" should also note these practices will only be allowed where the infiltration of storm water would not pose a potential threat to groundwater quality. "Wetlands or Permanent Wet Ponds" should also not be restricted to locations where soils provide an adequate percolation rates. In fact, these practices are often more appropriate when located in soils with low infiltration/percolation rates. This section also currently states that "Media Filters/Flow Through Separation (water quality inlet or oil & grit separator, wet vault, vortex separator, drain inserts) shall be used for all commercial and industrial development, multi-family residential common use impervious areas, and for all parking areas with more than (#?) spaces. The Salinas DSP will indicate that these practices may be used for upstream pretreatment (e.g. removal of coarse sediment, trash and

debris) prior to additional treatment by LID practices such as swales and bioretention systems or treatment controls such as storm water ponds and constructed wetlands. However, flow through separation devices should not be used as "stand alone" treatment control BMPs because they are typically not effective for treatment of the suspended and dissolved pollutants commonly found in urban runoff.

It should be noted that this section also includes a discussion on the acceptable use of "Biofiltration" treatment control BMPs integrated within existing vegetative buffer areas, landscape corridors, or within setback areas (e.g., parking lot perimeters, median strips, landscape areas around buildings). This provision is very supportive of LID.

Finally this section also discusses the responsibility for the operation and maintenance of storm water quality control measures (City and privately owned/operated BMPs) and requires developers and owners of private facilities to provide a maintenance plan and funding mechanism to the City for approval by the City Engineer. These provisions are consistent with the requirements of the Salinas NPDES Permit. However, the City should consider the development of a model maintenance agreement and O&M manual to ensure that these documents are provided in a consistent, effective, and enforceable format.

H. DESIGN SUBMMITTAL REQUIREMENTS – In this section, the contents of the City's required design report for proposed storm drainage system improvements could be strengthened to support compliance with the Salinas NPDES Permit. The City should consider adding requirements for developers to analyze pre-and post-project pollutant loads and to identify the structural and non-structural BMPs to be implemented to mitigate the projected increases in storm water pollutant loads.

4.4.3 Part II Section IV & V – Development Plans and Development Plan Check List

The Development Plan Check List currently contains some sections that may assist the plan check staff to assess the hydrology of a development site. This checklist could be strengthened by requiring the calculations for a site's pre-development storm scenarios in addition to the calculations for post-development. The required *Construction Plans* need some updating in the *Concrete Work* and *Drainage/Grading Plan* to better support the adoption of LID practices within the City.

4.4.4 Part III Design Standard Plans

28 Median Island Standard Construction Plan
29 Median Island Standard Planting Plan
46 Street Tree planting
48 Median Island Details

The design standard plans listed above assume the continued use of standard curb and gutter construction. It is recommended that the City of Salinas develop a set of standard plans to support LID. The new set of landscape plans should account for curb cuts and sheet flow into landscape areas. The native soils and soil amendments should be appropriate for LID infiltration rates. LID planting palettes should be adopted to meet the dry/inundation cycles and soils types for LID landscape areas. It is recommended that details for grassy swales, detention basins, and tree box filters are developed and added to the existing standard plans.

4.5 The Salinas General Plan (September 2002)

The Salinas General Plan (Plan) is intended to serve as the "blueprint" for new development in the City and the surrounding area. It provides a broad framework for the evaluation of development proposals, ordinances and policies. The Plan emphasizes the protection of the most valuable agricultural lands to the south and west of the existing City limits. The Circulation Element of the Plan shows potential bypass roads on both the western and eastern sides of the City. The Plan represents an expansion of areas shown for future growth and annexation of 426 acres above the previous Plan adopted in 1988. The Salinas City Council adopted the updated Plan and certified the associated Environmental Impact Report on September 17, 2002. It can be accessed at:
www.ci.salinas.ca.us/CommDev/GenPlan/GenPlanFinal/GPindex.html

Review of the City of Salinas General Plan suggests that there is adequate policy foundation for the implementation of LID practices. These policies exist within the Community Design Element, Conservation and Open Space Element and Land Use Element of the General Plan. In addition, the review did not discover any policy barriers to LID practices. Relevant goals and policies are summarized according to General Plan element in Table 4 below.

In addition, outside of the General Plan, the City should consider additional opportunities (beyond new development) to implement LID practices such as within redevelopment and within City projects.

Table 4: Summary of Major City of Salinas 2002 General Plan Goals, Objectives and Policies Related to Resource Management--Water Quality and Quantity.

Category	Goal/Policy	Abbrev.	Number	Description
Community Design Element	Goal	CD	3	Create pedestrian friendly environment
	Policy	CD	1.5	Create park-like atmosphere
	Policy	CD	1.6	Locate/design water retention for habitat and visual quality
	Policy	CD	2.8	Avoid unlandscaped parking areas
	Policy	CD	3.1	Create/preserve distinct neighborhood development characteristics

Category	Goal/Policy	Abbrev.	Number	Description
	Policy	CD	3.8	Promote alternative transportation modes
Conservation and Open Space	Goal	COS	1	Promote safe/adequate water supply
	Goal	COS	5	Protect/enhance ecological/biological resources
	Policy	COS	1.1	Cooperate with local, regional and state agencies for new water sources
	Policy	COS	1.4	Maintain/restore natural watershed
	Policy	COS	1.5	Cooperate w/water agencies re: salt water intrusion, nitrate contamination
	Policy	COS	2.1	Participate/implement local/regional programs for water conservation
	Policy	COS	2.4	Apply standards that promote water conservation
	Policy	COS	5.1	Protect riparian corridors
	Policy	COS	5.2	Potential creation of Gabilian Creek Regional Park
	Policy	COS	7.2	Maximize use of built/natural features into open space network
	Policy	COS	7.11	Develop/maintain integrated system of open space corridors
	Goal	Imp Prog	1	Incorporate Best Management Practices
	Goal	Imp Prog	3	Identify / protect critical aquifer recharge areas
	Goal	Imp Prog	4	Coordinate with other jurisdictions
Land Use	Goal	LU	2	Manage future growth to minimize impacts
	Policy	LU	2.2	Public services provided on timeframe consistent with development
	Policy	LU	2.3	Encourage clustering of development in Future Growth Area
	Policy	LU	2.4	Utilize well-designed, in-fill development in Focused Growth Areas
	Policy	LU	2.5	Minimize negative impacts of future growth
	Policy	LU	6.3	Participate/support regional surface water / groundwater programs
	Policy	LU	6.4	Actively promote water conservation
	Policy	LU	6.5	Review large residential developments for consistency with Cal Water Code
	Policy	LU	7.2	Review development proposals for adequate sewer collection/treatment
	Policy	LU	8.2	Apply appropriate development standards for drainage system improvement
	Policy	LU	8.3	Flood control requirement for new development
	Policy	LU	8.4	Continue use of Carr Lake

4.6 The City of Salinas Storm Water Master Plan (May 2004)

The City of Salinas Storm Water Master Plan was developed by Camp, Dresser and Mackee (CDM) in May 2004. It updates the storm drainage information in the City's 1992 Sewage and Drainage Master Plan. Hereinafter referred to as the Storm Drainage Master Plan (SDMP), the report was intended to primarily address water quantity issues, and therefore discusses drainage for existing and future development. Water quality is discussed primarily in terms of the potential water quality benefits provided by detention basins and for recommended improvements to detention basins to improve water quality. In the northern portion of the City (which has seen extensive development) storm water runoff is conveyed by the Reclamation

Ditch system and the Santa Rita Creek, eventually leading to Monterey Bay. In the southern portion of the City storm water is pumped to the Salinas River.

There are over 74 miles of storm drainage reinforced concrete pipe (RCP) ranging in size from 24"-84" in diameter, as well as some 18-inch pipes (that were not modeled in the plan). The storm water pumping station and Blanco detention basin are located at the former wastewater treatment plant at the south-western City boundary. The peak capacity of the pumping station is 110 cfs, and if a storm event exceeds this capacity, runoff is temporarily stored at the detention basin (36 acre-feet). Detention basins in five other areas in the City; Harden Ranch, Harden Plaza, Chavez Park, Northgate Park and Westridge Center, provide peak flow reduction. The Reclamation Ditch is a major drainage channel that flows from east to west through the City, and is the conveyance to which most of the City drains. Carr Lake, located approximately in the middle of the City, serves as detention storage and receives water from the Reclamation Ditch and the creeks tributary to the Ditch during winter rainy periods.

The model HYDRA was used by CDM in the SDMP for storm drain system capacity analysis. The planning criteria used in the model included land uses, hydrologic and hydraulic criteria. The model assumed that all land uses within the City's existing developed area were fully built out. The SDMP hydraulic analysis indicated that under current conditions the City's storm drain system typically operates in a surcharged condition. However, there were few significant overflows and no locations were identified as high priority for improvement. The major existing drainage problem noted was the agricultural runoff from the adjacent fields. Detention of this runoff upstream, prior to entering the City's system, was recommended to address this problem. This appears to be a prudent recommendation as Kennedy/Jenks has observed significant sediment loads in Gabilan Creek from upstream agricultural practices. Detention and/or source control BMPs should be applied to upstream agricultural land uses to protect and enhance the water quality and habitat of the riparian corridors within the City. If these measures are not implemented, LID implemented in urban development in the City will have little effect on improving the water quality and habitat of the riparian corridors within the City.

The HYDRA model input utilized 6-hour design storms for the 5, 10 and 20 year events and losses due to infiltration and drainage. To calculate future runoff, future residential land uses were assumed to be 50-90% impervious; future commercial and industrial, 80-90% impervious. It was anticipated that future residential development would have higher impervious coverage than existing development, because it would have smaller lots and a greater percentage of impervious area. Capacity deficiencies were identified and additional capacity needs were calculated based on hydraulic parameters. The HYDRA model was used to route flows through the storm drain system and generate hydrographs, based on travel times and times of concentration. The results of the model indicate that extensive improvements to the existing storm drain system would be necessary to provide a higher level of protection. It also indicated that increased urbanization would increase the volume and rate of runoff draining to existing storm drainage facilities. As the focus for the SDMP was to assess the hydraulic capacity of the

existing storm drain system for existing and future conditions, the methods used were appropriate for a master plan-level analysis. The use of LID to reduce flows was not apparently considered in the Master Plan.

The SDMP notes that inverted siphons are known to cause some ponding problems in the City if sediment build-up is not removed before a storm event. The SDMP also notes that the major drainage issue affecting the City is from the agricultural fields adjacent to the east and north of the City, where runoff overtops the tailwater ditches and enters the City's storm drain system. This occurs on the east side of the City near Williams Road and the north side along Boronda Road. This agriculture runoff typically has a high sediment load, which causes mud to be deposited in City streets and the storm drain system, and can also affect private property.

According to the 1985 Storm Drain Design Standards, the City of Salinas has designed its storm drain system for the 20-year storm event in commercial and industrial areas, and for the 5-year storm event in residential areas and local facilities. The 1992 Sewer and Drainage Master Plan evaluated the storm drain system for the 5 and 25-year storms; however the City has never required the 25 year storm event design standard for any storm drainage facilities. Soils within the majority of the City consist of Type C & D hydrologic soil groups, which typically have high runoff potential and low infiltration rates.

Additional information on backwater conditions and water surface elevations in the existing Reclamation Ditch is provided in the *Zone 9 and Reclamation Ditch Drainage System Operations Study* (Monterey County Water Resources Agency (MCWRA) Draft Report, February 1999). This study considers implementation of recommended improvements to the Reclamation Ditch to lower the maximum surface water elevation at Carr Lake, Markeley Swamp and Heins Lake.

Per the City's 2004 Design Standards (discussed previously in Section 4.4), storm water detention or retention is required for new development and redevelopment to mitigate subsequent increases in storm water discharges. Drainage system design is also required to be in accordance with the MCWRA detention criteria for new development discharging to Carr Lake, its tributaries, and to the Reclamation Ditch system. The MCWRA requires sizing of detention/retention basins to limit discharge to the 10-year pre-development rate, and to store the difference between this rate and the 100-year post-development rate upstream of North Main Street and/or West Laurel Drive/US 101. The City prefers use of detention basins over retention basins, due to the proximity of major drainage channels and low soil permeability across much of the City. This appears to be a prudent practice. If sufficient acres of redevelopment areas incorporate LID, detention basins could be reduced in volume . The feasibility of this will be governed by site conditions.

The SDMP report specifies that future detention/retention basin design must incorporate features that provide storm water quality benefits while still meeting flood control needs. Detention basins must drain within 48-72 hours to prevent mosquito/vector control issues. The

SDMP indicates that the City uses the California Stormwater Quality Association's (CASQA) Stormwater Best Management Practice (BMP) Handbook for New Development and Redevelopment as the basis for selection and design of structural treatment control BMPs for storm water quality. It further indicates that source control BMPs and treatment control BMPs must be incorporated into new and redevelopment projects as needed to control potential pollutants in storm water. This statement is consistent with the requirements of the Salinas NPDES permit and implies that the City is familiar with the sizing and design criteria for treatment control BMPs presented in the CASQA handbook. It should be noted that this is essentially the same sizing criteria presented in the Salinas NPDES permit (and the DSP).

The City's storm drain system uses storm water detention for flood control. The SDMP notes that these facilities also provide storm water quality benefits because sediment and other pollutants settle out in these basins rather than be discharged into the downstream system. This is true, provided the basins are cleaned regularly and the sediment and debris are removed. If not cleaned prior to the rainy season, detention basins can act as a pollutant sources. As noted previously, current detention systems are designed for larger storms for flood control purposes (10 year). The SDMP report indicates that it would be beneficial to detain/retain runoff from smaller (2 year) storms for maximum water quality benefits. The SDMP report recommends outfitting detention basin discharge outlets with debris and sediment traps, which will require regular maintenance. These recommendations are also consistent with the requirements of the Salinas NPDES permit and the guidance provided in the CASQA BMP Handbook for New Development and Redevelopment (and the DSP).

The SDMP report indicates that new development will be required by the City to limit flows to existing natural detention areas (Heins Lake, Carr Lake and Markeley Swamp) because the existing Reclamation Ditch system is already over capacity. Improvements are being considered to this system, in particular to Carr Lake because it provides critical detention for the proper functioning of the Reclamation Ditch, and should be considered the highest priority. The SDMP report indicates that design of new detention basins and storm water quality features will meet NPDES requirements.

Based on the HYDRA model analysis, there were four prioritized capital improvements in the City. The first priority was the agricultural runoff issue; the second addressed miscellaneous localized drainage improvements in the existing system. The third priority addressed locations where significant overflows may occur upstream of existing pipes with inadequate hydraulic capacity, while the fourth was detention storage for new development areas. Table 5.1 of the SDMP report details the projects within the four priorities, including a description of the project and estimated costs.

The SDMP notes that the Priority 1 agricultural runoff issue could be addressed with detention storage to control agricultural runoff prior to it entering the City's storm drain system. The stored runoff would be allowed to enter the City's system when capacity is available in the system. This detention storage is considered temporary until future development occurs and more

permanent infrastructure is constructed. Locations of these temporary detention basins will require agreements with the private property owners, with several smaller basins constructed rather than one large basin. The City, through a maintenance district financed by responsible property owners (or other financing tolls), will oversee and supervise the maintenance of these detention basins and related berms.

Priority 2 projects include installation of a drainage ditch or pipe to convey runoff to a wetlands area; rehabilitation of the Salinas River Storm Drainage Outfall; retrofit of existing City detention basins with storm water quality features (debris and sediment traps, stepped detention storage, sand filters, and oil and grease traps in parking lot detention basins). Priority 3 projects are lower priority. Model results indicated significant overflows at some locations; however there is little historic indication of such problems. Priority 4 improvements consist of regional detention basin storage for new development areas. Specific locations and sizes of these basins will be determined by the City as part of the development planning process. There are a number of additional recommendations, including improvements to the Reclamation Ditch, and providing additional system capacity. Widespread implementation of LID to mitigate increased flows from existing and new development was not considered in the SDMP. If truly implemented in all new development and redevelopment in the City, LID could effectively reduce or eliminate existing problems with overflows and the inadequate hydraulic capacity of existing pipes.

Additional development outside the current City boundary is likely. However, as noted in the SDMP, the existing storm drain system is already operating at its maximum capacity and the Reclamation Ditch does not have the capacity to handle additional runoff. The SDMP report recommends that future development must participate in the regional detention basins for runoff storage prior to discharge to the creeks or the City's existing storm drain system. Basin design must incorporate features that provide storm water quality benefits and meet flood control needs, including appropriate landscaping and recreational features. Storm drains to convey flows for large storm events will need to be designed to serve new development, and will be required to be sized for ultimate build out of the tributary drainage area to prevent flooding. As indicated in the SDMP, other measures to improve water quality are also necessary. However, as noted previously, if widespread effective implementation of LID occurs, storm drain/detention basin system sizing for flood control could be significantly reduced.

Project implementation should include incorporating Capital Improvement Projects (CIP) into the City's 20 year CIP; staffing issues, planning for environmental review of projects, and coordination with other underground utility projects. The Master Plan should be updated every 5-10 years to reflect changing conditions, and updated with NDPES storm water permit renewals.

4.6.1 Storm Drainage Master Plan Technical Memorandum

Task 1 - Model Review

The previous citywide drainage system model was considered by CDM to be out of date due to significant growth in the Salinas area. This memorandum details the selection of the model used for the City's drainage system. Numerous models were evaluated by CDM for the SDMP project including the public domain models HEC-1, SWMM, and TR-20. The model chosen, HYDRA 6.0, is a proprietary model that is already owned and used by the City. Additionally, it is user-friendly, and is the same model used for the City's sanitary sewer system. Although it is not a dynamic model and requires special techniques when there are overflows or surcharging in the system, CDM felt it would still sufficiently model the Salinas system. Although the SWMM model may provide a more accurate routing than HYDRA, it requires additional modules that must be purchased, and requires extensive modeling experience. The other models reviewed were not chosen due to limitations such as prohibitive cost, simulations restricted to open-channels, and inability to simulate backwater and surcharge effects. The ability of the HYDRA model to analyze pre- and post-development pollutant loads and the reduction in the rate and volume of runoff through the implementation of LID was not considered in this analysis.

4.6.2 Storm Drainage Master Plan Technical Memorandum

Final Task 10 - Alternative Funding Sources

The following is a summary of the tech memo appendix to the SDMP. Funding is required to support improvements to storm water systems and regulatory requirements. The City collects development fees, which includes a storm drain fee to provide new drainage facilities for additional runoff from new developments. An additional storm sewer fee implemented by the City Council in 1999 was eventually invalidated, forcing the City to find other monetary sources.

At this time, gas tax revenue, which would ordinarily be used for street improvements, is currently being used. However, gas tax funds are limited and needed for other City maintenance uses. City staff will be working on other opportunities to identify and secure other funding sources. Charging of additional fees is difficult due to court rulings and the State Constitution, (especially Proposition 218) making it more difficult for local governments to raise funds to reduce pollutants in storm water. If an amendment is approved (ACA 10), there are a number of different approaches for storm sewer fees, including a fee imposed specifically on a runoff contributor rather than the property owner; voter approval of a storm water fee as an assessment; and combination of other methods.

Alternate funding mechanisms include development contributions such as subdivision requirements (facilities donated by developers) and development fees (fees levied against developers). There are limited funds available from the City's General Fund, with public safety and health considered priorities above storm water improvements. General Obligation and

Revenue Bonds, which require voter approval or demonstration of adequate revenues, have been successfully used by other cities for construction of storm water facilities. Special Districts can be established as funding mechanisms, including issuance of bonds, forming a separate district, and property tax or assessment based on the benefit received. A storm water use fee is considered an equitable fee because charges are assessed to each parcel based on their use of the drainage system. However, as noted above, Proposition 218 has made this option difficult because fees are only allowed by a 2/3 majority voter approval.

A number of Federal, State, and County grants and loans are available to fund types of infrastructure, however significant competition and active lobbying are required to successfully obtain funds. Additionally, grants are available through a variety of wetlands and restoration programs. Smaller sources of funding considered supplemental revenues can be obtained from local taxes, fees imposed for plan review, and revenues from penalties and fines.

4.7 The Salinas River Watershed Management Action Plan (October 1999)

The Salinas River Watershed Management Action Plan (Action Plan) was developed by the Regional Board to describe the agency's approach to watershed management for the Salinas River drainage area. In so doing, the Action Plan's ultimate goal is to more effectively protect and improve the water quality of the Salinas River watershed, by supporting the development of local solutions to local problems. The Action Plan provides an overall framework for the Regional Board to chart and coordinate efforts.

The Salinas River Watershed is a large geographic area (4,600 square miles) with numerous complex water quality issues. The Salinas River and several of its tributaries have been listed on the Clean Water Act's 303(d) list of impaired water bodies due to point and non-point source pollution. Water quality impacts are widespread and include seawater intrusion near the coast, nitrates in the groundwater and surface waters, pesticides in sediment and animal tissues, mercury in Lake Nacimiento and erosion and sedimentation. Although not discussed in the Action Plan, a recent deadly E. coli outbreak from spinach grown in the Salinas area has brought national attention to the water quality issues of the area.

The implementation actions are broad-based watershed management strategies that define the agency's role and responsibilities. The plan does not include details for cities, agency's, individuals, or other entities to implement. The principal elements of the approach is for the Regional Board to devote resources (time and grant funding), and increase their presence in the watershed through the development partnerships with local governments, resource agencies, citizen groups and landowners.

Salinas is the largest City in the watershed, now with over 150,000 people. Rapid urban development increases non-point source pollution pressures on the adjacent ground and surface waters. As such, #8 on the list of the *Regional Board's Watershed Management*

Activities in the Salinas Watershed (page 7) states, "(The Regional Board is) Expanding outreach to cities, counties, and urbanized areas regarding the Storm Water Program and upcoming requirements for municipal, industrial and construction storm water permits in conjunction with the (Monterey Bay) Sanctuary's Model Urban Runoff Program". The current Low Impact Development (LID) project in the City of Salinas, funded by the Regional Board, provides an example of the partnerships, presence and collaboration that the agency describes as its approach in the Action Plan.

Numerous scientific studies have been conducted in the Salinas Watershed and its water quality issues since the Action Plan was written in 1999. Similarly, new water policy and watershed management strategies have been developed. Many of the subsequent efforts have been spearheaded and supported by the Regional Board and may be an indicator of the success of the Action Plan.

A comprehensive review of the success of the Action Plan would be an involved process that would require the Regional Board to review the milestones and activities of the past seven (7) years. As stated in the Action Plan, milestones, reassessments, and future actions should have since been developed to chart the progress of the Regional Board and its watershed management activities Salinas River watershed.

As other Action Plans on the Central Coast have done, the Salinas River Watershed could benefit from an update or supplemental document. An update or supplement could reflect current data, studies, and approaches to watershed management. An update of the document would provide the opportunity to define more specific goals and objectives for the large and dynamic watershed.

5.0 Public Education and Outreach

Public education and outreach, related to the development and implementation of the Salinas DSP, has been conducted to date through the process of advertising and presenting public workshops at the City and the posting of workshop information on the Regional Board's website http://www.swrcb.ca.gov/rwqcb3/SWNEW/PhaseI/Municipal/index.htm.

A comprehensive Project Kick-Off meeting was held at the City of Salinas on 8 May 2006. Those attending included staff from the Regional Board, the City, Kennedy/Jenks and Joni L. Janecki & Associates. It was discussed at this meeting that key members of the local development community should be targeted to attend the workshops. In addition to posting a public notice, it was discussed that other key local and regional planning, engineering, landscaping, business, and environmental interests should also be specifically invited to attend the workshops (via City email, fax and telephone communications).

After the first public workshop on 22 June 2006, it was discussed that the public education and outreach effort for this project should be limited to those parties who will be potentially impacted by the new development and redevelopment policies and procedures in the City of Salinas (e.g. the Development Standards requirements of the Salinas NPDES Permit). It was discussed that the City's workshop notification efforts should not include all potentially interested parties in the Central Coast region (although anyone interested in attending would be welcome). If successful, the Regional Board may conduct additional expanded public education and outreach on the LID policies and procedures developed for the City at a later date. The following is the list of the stakeholders and other interested parties developed by Kennedy/Jenks and Joni L. Janecki & Associates on 6 July 2006 (with the previous references to the City Parks, Public Works, Planning departments changed to Development and Engineering Services and Maintenance Services)

- Civil engineers that submit plans to City
- Landscape architects and Planners that submit plans to City
- Developers that plan to build in the City
- Future Development Area and Carr Lake Landowners
- Rotary or other community groups
- Business groups such as the Chamber of Commerce
- Neighborhood groups (including school groups)
- City staff from key departments (Development and Engineering Services, Maintenance Services, and Redevelopment)
- County staff from MCWRA and Environmental Health
- City political representatives
- Return of the Natives (Laura Lee Lienk)
- 1000 Friends of Carr Lake (Kurt Hunter)
- The Watershed Institute (Fred Watson)
- CSUMB (Doug Smith)
- Others not listed above that attended Workshop No. 1 on June 22 and provided contact information on the sign in sheet
- Other local environmental groups

This list above was provided to the City with a recommendation that they should consider contacting these individuals/groups for potential attendance and involvement at the public workshops. Appendix D presents the lists of individuals/groups that have been contacted by the

City to date and a list of workshop attendees (compiled by the City). The flier developed by the City for Workshop No. 2 is also presented in Appendix D. In addition, the agendas, workshop notes and sign-in sheets for Workshops No. 1 and 2 (conducted 22 June and 10 August, respectively) developed by Kennedy/Jenks and Joni L. Janecki & Associates are presented. As noted previously, copies of the workshop PowerPoint presentations are currently posted on the Regional Board's website.

Enclosures:

Appendix A – December 22, 2005 Regional Board letter to the City of Salinas

Appendix B – Questionnaire and Full Responses

Appendix C – City of Salinas Precipitation Analysis

Appendix D – Public Education & Outreach

Appendix A

Regional Board letter to the City of Salinas

California Regional Water Quality Control Board
Central Coast Region

Alan C. Lloyd, Ph.D.
Agency Secretary

Arnold Schwarzenegger
Governor

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Mayor Anna Caballero
Vanessa Vallarta, City Attorney
Dave Mora, City Manager
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Robert Russell Deputy City Manager
Robert Richelieu, Planning Manger
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Denise Estrada, Maintenance Services Director
Michael Ricker, Water Resources Planner
Mail to: 426 Work Street
Salinas, CA 93901

December 23, 2005

Ms. Caballero:

RE: CITY OF SALINAS STORM WATER PERMIT MAXIMUM EXTENT PRACTICABLE STANDARD AND LOW IMPACT DEVELOPMENT TECHNIQUES; R3-2004-0135; MONTEREY COUNTY

The City of Salinas (City) representatives have verbally asked what the baseline Design Standards and Ordinances must encompass to comply with the Waste Discharge Requirements for the City of Salinas Municipal Storm Water Discharges ("Salinas Permit", which includes Order No. R3-2004-0135 and all Attachments). Additionally, the City has informally inquired whether Low Impact Development technology is a requirement for new and re-development. To answer these questions, we have compiled excerpts from the Salinas Permit. The City must abide by all aspects of the Salinas Permit, however the following Permit sections will provide background for the discussion to follow.

The Salinas Permit states:

a. "Discharges from MS4s in a manner causing, or threatening to cause, a condition of pollution, contamination, or nuisance... in waters of the State of California are prohibited." (Salinas Order, Discharge Prohibition A.1);

b. "Discharges from MS4s containing pollutants that have not been reduced to the Maximum Extent Practicable (MEP) are prohibited." (Salinas Order, Discharge Prohibition A.2);

c. "...The Code of Federal Regulations (40 CFR 122.26(d)(2)(iv)) requires storm water permittees to implement BMPs to reduce pollutants in storm water discharges to the maximum extent practicable. BMPs are described in the Permittee's SWMP." (Salinas Order, Effluent Discharge Limitations B.1);

d. "Discharges from the MS4 of storm water, or non-storm water for which a Permittee is responsible, shall not cause or contribute to a condition of nuisance in Receiving Waters." (Salinas Order, Receiving Water Limitations C.2);

e. "The SWMP shall be designed to achieve compliance with Receiving Water Limitation(s) to the MEP." (Salinas Order, Receiving Water Limitations C.3);

f. "MEP is generally a result of *emphasizing pollution prevention and source control BMPs as the first lines of defense* in combination with structural and treatment methods where appropriate serving as additional lines of defense. The MEP approach is an ever evolving, flexible, and advancing concept, which considers *technical and economic feasibility. For purposes of this Permit, the Regional Board will determine compliance with the MEP standard based on the terms of the Permit, including Attachment 4*; and State Board decisions or guidance, *EPA regulations and guidance* and applicable case law defining MEP." (Salinas Order, Finding 16, italics added).

Traditional development and re-development techniques typically cause and threaten to cause pollution, contamination, and nuisance through increased storm water runoff volumes, rates, and temperatures. Excess storm water runoff also acts to carry urban pollutants to receiving waters quickly and efficiently (which is not desirable). Traditional methods of storm water conveyance and end-of-pipe basins are marginally effective at mitigating erosion, sedimentation, urban pollutant removal, and thermal impacts in receiving waters. The Salinas Permit Attachment 4 is very specific about particular site plan development principles that must be incorporated to meet MEP in order to address urban runoff impacts. In particular are the following excerpts from Attachment 4 of the Salinas Permit (italics added):

1. *Minimize the amount of impervious surfaces and directly connected impervious surfaces in areas of new development and redevelopment and use on-site infiltration of runoff* in areas with appropriate soils where the infiltration of storm water would not pose a potential threat to groundwater quality (Attachment 4, III.a.i.1);
2. Implement pollution prevention methods supplemented by pollutant source controls, and if source controls are not practicable, by treatment controls. Where practical, use strategies that control the sources of pollutants or constituents to *minimize the transport of storm water and pollutants offsite* and into MS4s (Attachment 4, III.a.i.2);
3. *Preserve* and, where possible, create or restore areas that provide important water quality benefits, such as *riparian corridors, wetlands and buffer zones* (Attachment 4, III.a.i.3);
4. *Limit disturbances of natural water bodies and natural drainage systems* caused by development within Permittee's jurisdictional authority, including roads, highways, and bridges (Attachment 4, III.a.i.4);
5. Require developers to prepare and submit studies analyzing pre- and post-project pollutant loads (including sediment) and flows resulting from projected future development. Require incorporation of structural and non-structural *BMPs to mitigate the projected increases in pollutant loads in runoff* (Attachment 4, III.a.i.5);
6. Implement source and/or treatment controls as necessary to *protect downstream receiving water quality from increased pollutant loads in runoff flows from new development and significant redevelopment* (Attachment 4, III.a.i.7); and
7. *Control the post-development peak storm water run-off discharge rates and velocities to prevent or reduce downstream erosion, and to protect stream habitat* (Attachment 4, III.a.i.8).

The US Environmental Protection Agency (EPA) published the "National Management Measures to Control Nonpoint Source Pollution from Urban Areas" (November 2005, EPA-841-B-05-004) which also

gives specific guidance on new and re-development principles. The first few pages of Chapter 4, "Site Development", and Chapter 5, "New Development Runoff Treatment" contain a list of the primary principles, and are copied and attached to this letter.[1] **The overriding concern in the Salinas Permit and EPA guidelines is reducing urban impacts to receiving waters by maintaining predevelopment hydrology, which in turn minimizes urban pollutants reaching waterways. These goals are achieved by designing sites that disturb (starting from the site layout, and grading and compaction phases of construction) only the smallest area necessary, minimize soil compaction and imperviousness, preserve natural drainages, vegetation, and buffer zones, and utilize on-site, lot-sized storm water treatment techniques. These principles and techniques are collectively known as "Low Impact Development, (LID)".** At the core, LID technology is a collection of methods, beginning with site design, which a developer may choose from in order to reach **the ultimate goal of having post-development hydrology match pre-development hydrology.** The added goal of minimizing pollutant transport and maximizing on-site pollutant treatment is an added benefit gained from utilizing LID techniques. LID techniques have been employed by various municipalities nationwide, and worldwide, and have been shown to be effective and feasible methods of preventing urban development impacts to receiving waters. In many cases, the cost of low-impact development is lower than traditional development, both in terms of construction costs and costs to maintain infrastructure and BMPs. Because LID techniques are effective, feasible and economically practicable, they meet the MEP definition. The Salinas Permit requires the City to meet MEP. MEP is defined by what is required in the Permit, EPA guidance, and current applied and available methods and technology. The methods collectively called "Low Impact Development" meet the MEP definition. The City must, therefore, incorporate LID methodology into new and redevelopment ordinances and design standards unless the City can demonstrate that conventional BMPs are equally effective, or that conventional BMPs would result in a substantial cost savings while still adequately protecting water quality. In order to justify using conventional BMPs based on cost, the City would have to show that the cost of low impact development would be prohibitive because the "cost would exceed any benefit to be derived." (State Water Resources Control Board Order No. WQ 2000-11.) The City must provide convincing arguments if the City fails to incorporate low impact development principles. Conventional site layouts, construction methods, storm water conveyance systems with "end of pipe" basins and treatment systems that do not address the changes in volume and rates of storm water runoff and urban pollutants (including thermal pollution) do not meet MEP standards where low impact development is more effective at reducing pollutants in storm water runoff at a practicable cost.

We hope that the information in this letter helps clarify the requirements of the Salinas Permit. If you have questions, please contact Donette Dunaway at (805) 549-3698 or ddunaway@waterboards.ca.gov.

Sincerely,

Roger W. Briggs
Executive Officer

[1] A complete copy of the EPA document is available at http://www.epa.gov/owow/nps/urbanmm/pdf/urban_guidance.pdf

Appendix B

Questionnaire and Full Responses

Questionnaire

Low Impact Development Design Standards and Ordinance Review

City of Salinas and the Central Coast Regional Water Quality Control Board

K/J Job No. 0695006

Introduction

Extensive scientific research by the U.S. Environmental Protection Agency and others reveals that conventional urban storm drainage systems significantly increase the rate and volume of runoff, and the discharge pollutant to receiving waters such as local streams, wetlands, rivers and the ocean. Conventional urban storm drainage typically consists of continuously connected impervious surfaces (roofs, driveways, curbs and gutters, culverts, inlets, concrete lined channels and underground storm drain pipes) that prevent the absorption of storm water and collect and store pollutants such as petroleum hydrocarbons, fertilizers, pesticides, sediment and trash. When directly connected impervious surfaces are washed by rainfall, irrigation overspray or outdoor washing practices they can produce polluted urban runoff that is transported directly to receiving waters. Alternative approaches to storm drainage that disconnect impervious surfaces and mimic natural hydrologic processes are collectively referred to as Low Impact Development (LID). Other communities have successfully pioneered LID practices such as depressed swales and basins designed to filter and retain runoff through vegetation and amended permeable soils. In addition to reduced pollutant loads, LID practices have the potential to reduce flooding and water rights entitlements and increase groundwater recharge. These attributes can benefit the sustainability and environmental quality of the City of Salinas and help the City meet its regulatory requirements.

Kennedy/Jenks Consultants has been retained by the Central Coast Regional Water Quality Control Board to develop standards for the City of Salinas that will effectively reduce the volume, rate, and pollutant loading of urban runoff. These objectives are required under Central Coast Water Board Order No. R3-2004-0135. To accomplish these objectives, Kennedy/Jenks will review the City's codes and ordinances; prepare a model LID ordinance, and develop an LID design guidance document in a format suitable for application, with appropriate modifications for specific local conditions, to the Central Coast region's municipalities. The questions below are intended to understand the current development process in the City of Salinas (City) and the measures necessary for the City to implement LID. ***Please write your answers on a separate sheet and provide them to Carl Niizawa in Development & Engineering Services no later than 5:00 PM, Monday June 12, 2006. Please indicate your name, title and department on your answer sheet. If you do not know the answer to a specific question because it is not the responsibility of your department, please indicate NA. Thank you!***

1) What are the existing design, review and approval procedures for proposed storm drainage facilities in the City of Salinas?

2) When a new development or redevelopment project is proposed, how does the City address the increased runoff associated with additional impervious surfaces?

3) How does the City currently assess and control potential water quality impacts to surface waters from construction sites?

4) At what point in the development process do landscape architects typically get involved? What scale (e.g. # of units) of development project results in the assistance of a landscape architect?

5) Are there any existing policies and procedures that would prevent engineers and landscape architects from working together in the design of LID drainage methods such as vegetated swales and bioretention basins?

6) What processes would be required for the City to require applicants to graphically display proposed post construction structural treatment controls and LID practices on tentative subdivision maps, preliminary site plans, grading permits, and special use permits for both private and public works projects? Are there existing City documents that cite submittal requirements? If so, are they available for review and modification?

7) What tools would assist the designers and reviewers of structural treatment controls and LID practices with their proper design, construction and maintenance? Examples of tools include: training, example hydrologic/hydraulic calculations, checklists, worksheets, etc.

8) Hazardous Material Storage

    a. Are proposed industrial and commercial development and redevelopment projects required to identify the materials and chemicals that will be stored outside and potentially exposed to storm water? If so, in what document is the requirement cited?

    b. Are spill control and cleanup supplies required at industrial and commercial properties that store materials and chemicals outdoors? If so, in what document is the requirement cited?

    c. Are storm drain inlet shut off valves or secondary containment structures required at industrial and commercial properties that store hazardous materials and chemicals outdoors? If so, in what document is the requirement cited?

9) Infiltration and Testing Requirements

    a. Are septic systems with leach fields present within City limits? If so, where are they located, and approximately how many exist?

b. If leach fields are permitted, are soil infiltration testing methods required and is there a minimum depth to groundwater that must be identified prior to permitting infiltration of treated waste water?

c. What soil infiltration testing methods, if any, are commonly used in the Salinas area?

d. If soil infiltration testing and/or other soil tests are required, are the data required to be reported on a permit application or in reports related to site development?

e. Are there any documented cases of nitrate contamination of groundwater resulting from infiltration of waste water from septic system leach fields?

10) Storm Drain System Maintenance

a. Who is typically responsible for the operation and maintenance (O&M) of storm drain facilities on private property? How are these responsibilities documented? What department in the City is responsible for making sure that these facilities are recorded and maintained?

b. How is the O&M of private storm drainage facilities typically funded?

c. How frequently does the City sweep its streets and clean its storm drains and what equipment is used?

d. Where is the waste material from the City's street sweeping and storm drain cleaning operations stored and disposed?

e. How frequently are the City's major storm drain structures inspected? (e.g. storm drain trunk lines, outfalls, detention basins, etc.)

f. What legal mechanisms are available to the City to inspect storm drain systems located on private property?

g. Can the City assess fines and conduct maintenance of storm drain systems located on private property when a problem is identified and public health and safety is compromised or the water quality of receiving waters is impaired by practices or the lack of maintenance on that property? If so where is the ordinance/regulation cited.

11) What training and education opportunities (either sponsored by the City or by other organizations) are available for the planners, designers, owners and operators of new residential, commercial and industrial developments with respect to implementing methods to reduce urban runoff impacts to local water resources?

KENNEDY/JENKS LOW IMPACT DEVELOPMENT QUESTIONNAIRE

City of Salinas

1. What are the existing design, review and approval procedures for proposed storm drain facilities in the City of Salinas?

The vast majority of new storm drain facilities constructed in the City of Salinas are installed as part of new development. On all new developments, developers design and construct storm drain systems with City concurrence and approval of plans. For existing stormwater systems, which are owned and maintained by the City, improvements and upgrades are conducted through a Capital Improvement Project process. On these projects, design and implementation is conducted by under the direction of the City Engineer (Development and Engineering Dept (D&E)).

Development in Salinas can generally be separated into the larger developments, which normally comprise larger land areas (i.e. 5 acres or more) which necessitate the design of the on-site on off-site storm drain facilities. These oftentimes require discretionary entitlements and environmental analysis. The design engineer will review the pre-development stormwater runoff and post-development runoff to determine the impacts, size the system, and identify the need for retention/detention facilities. Most of the City is developed under Precise/Specific plans, which include a storm drain element and provisions for more regional detention/retention ponds. These are typically installed in developments of 5-10 acres or more. Small infill developments are rarely required to install retention detention ponds.

Smaller developments generally require very little hydraulic/storm water analysis, are usually less than one acre in size, and have little in the way of a storm drain system.

Since the new NPDES permit was approved by the Regional Board in 2005, staff has generally been requiring the following Storm Water Pollution Prevention Plan Best Management Practices: install straw wattles on the downstream side of construction or around the construction site, providing an on-site concrete washout area on the site (normally sites that are greater than 1 acre in size), providing a rock over filter fabric construction access (normally sites that are greater than 1 acre in size), placing gravel bags and filter fabric at all inlets potentially impacted by construction, and sweeping streets and sidewalks on a daily basis or as directed by the City Engineer's representative.

With regard to post-construction measures, we normally require the following: reduce hardscape and maximize landscaped areas to the greatest degree possible, install larger canopy trees throughout the site, drain portions of the site into/through landscaped areas, and using more permeable-type pavements; all as appropriate for the field conditions.

For larger construction projects (like the 850 unit Monte Bella development), construction included a silt basin to intercept runoff and silt material from the agriculture fields located upstream of the project, a larger interceptor ditch with check dams every 300 +/- feet to slow down water discharges and provide percolation opportunities, and a detention pond that will also function as a recreational/park area.

The process is typically a conceptual site plan where the various disciplines review the plan and make conditions/requirements thereon based on City Code. Engineering Services is primarily responsible for the review and conditioning of new development proposals in the City. Larger infrastructure that ultimately becomes the responsibility of the City is designed by an engineering professional, reviewed by City plan check staff (Engineering Services), and routed to the Maintenance Services Department for their review and approval.

Maintenance Services (MS) participates in review of conceptual and final plans. Historically, this review is to ensure proper design, adequate access or address other maintenance concerns as it relates to the maintenance services departments knowledge of existing or proposed infrastructure. Plans are routed to MS and other departments for comments on the proposed plans and final documents prior to implementation by the D&E group.

2. *When a new development or redevelopment project is proposed, how does the City address the increased runoff associated with additional impervious surfaces?*

The City is currently processing three projects that I would consider as "redevelopment". One was the re-use of a former Drive-In Restaurant that did not include any building area addition or new on-site improvements. Staff was unable to "condition" this project to better comply with the NPDES because this was a re-use project of a permitted use that had previously been in use 6 months ago.

The second was the re-use of a former bowling alley into a commercial center that required a site plan review and off-site parking arrangements. Staff required this development to reduce the hardscape on the parking area and create planter areas, and draining a portion of the site into the new planter areas. The project is under construction, and parking improvements are expected to be completed by year's end.

The third is a project staff (Carl Niizawa and Rob Russell) are working with the design engineer to convert a heavily hardscape property into a more low impact development. The original design of the drainage and storm drain system was submitted, and a consultation was held with the engineers to identify the need for lower impact measures. Staff is awaiting modified plans, expected by late July.

Staff is also processing two fast food restaurant reconstructions wherein we've required more landscaping, drainage through bio-swales/filters, more on-site trees, and permeable pavement as appropriate.

Similar to the information noted above, redeveloped sites are typically required to maximize new landscaped areas and minimize hardscape as much as possible, they are required to plant larger canopy trees throughout the site, and we strive to drain portions of the site into/through the site as current conditions feasibly allow.

Also, the City requests that the developer consider using pervious surface material such as pervious concrete or pavers, landscape/swale/island type areas, etc.

3. *How does the City currently assess and control potential water quality impacts to surface waters from construction sites?*

   The City currently reviews new development plans to assess potential water quality impacts before a grading or building permit is issued. Comments are written by the plan checker to control potential impacts. These comments must be incorporated into the project scope of work before a permit is issued.

   The City looks to include the conditions noted above to address the water quantity and quality issues of new development and redevelopment. The SWPPP discussion in question one provides greatest detail. The City does not use specific measurements or calculations to detail the effectiveness of these measures/features.

4. *At what point in the development process do landscape architects typically get involved? What scale (e/g. # of units) of development project results in the assistance of a landscape architect?*

   Landscape architects typically get involved in the development process after the initial site plan is approved, and only if the development is large (generally subdivisions consisting of 20+ residential homes, and commercial/multi-family sites 5 acres or more in size. Landscape plans are usually submitted with the building permit plans, and after planning-level approvals are secured. About 10% of the development projects result in the assistance of a landscape architect, based on staff's review of plans over the past year. Most of our recent projects are small residential additions and second units that do not require extensive landscaping. Designers normally provide the landscape plan for new development applications that are smaller in size. Only the larger subdivisions and commercial development employ a landscape architect.

5. *Are there any existing policies and procedures that would prevent engineers and landscape architects from working together in the design of LID drainage methods such as vegetated swales and bioretention basins?*

   No, there are no existing policies or procedures that would prevent engineers and landscape architects from working together in the design of LID drainage methods. No, there are no existing policies or procedures that would prevent engineers and landscape architects from working together in the design of LID drainage methods. As noted above, most of the development in Salinas over the past two years has been smaller developments, requiring much less professional design effort that is seen on larger projects.

6. *What processes would be required for the City to require applicants to graphically display proposed post construction structural treatment controls and LID practices on tentative subdivision maps preliminary site plans, grading permits, and special use permits for both private and public works projects? Are there existing City documents that site submittal requirements? If so, are thy available for review and modification?*

   The process for the City to require applicants to graphically display proposed post construction controls and practices would need to be a City Council Code Amendment or other adopted policy. There are no City documents that cite submittal requirements at this time, as these are in the process of being developed by Kennedy-Jenks.

7. *What tools would assist the designers and reviewers of structural treatment controls and LID practices with their proper design, construction and maintenance? Examples of tools include: training, example hydrologic/hydraulic calculations, checklists, worksheets, etc.*

   In the City of Salinas 2004 Standard Specifications, under Part II of the Storm Drain Design Standards (pages 128-139), the engineer is provided guidelines for submittal requirements which include “treatment Control Best Management Practices (BMP) for Design. The Standard Plans 45 & 45A also offer Best Management Practices. Additional details for common measures would be helpful in creating a user-friendly tool for designers to use. As stated at the Kennedy-Jenks, City of Salinas, and RWQCB meeting, a tiered approach in implementing “common” or “standard” measures would be very helpful for our designers. Most smaller projects are not designed by professional architects and engineers, but by designers who have little knowledge about NPDES. General tools for small projects, mid-sized projects, and large projects would be a way to help ensure low impact development is included in the design. Designers are not

necessarily against using these measures, but simply don't know what they are or how they can effectively be used.

In addition, the City is in the process of developing handouts that will list criteria for design engineers and developers to follow. It is anticipated that the handouts will include examples, pictures, and miscellaneous requirements to assist the designers and reviewers of structural treatment controls and LID practices.

8. Hazardous Material Storage

a. Are proposed industrial and commercial development and redevelopment projects required to identify the materials and chemicals that will be stored outside and potentially exposed to storm water? If so, in what document is the requirement cited?

Generally, yes. Proposed industrial and commercial development projects are required to identify materials and chemicals stored outdoors, and the location of solid waste and recycling facilities. The requirement is cited in the Operational/ Environmental Statement document from Current Planning.

Typically our Fire folks review planning-level applications and building permit plans for hazardous waste storage and protection; in accordance with the Fire Code.

Also, Chapter 16 Health and Sanitation, Article X of the City Code deals with Hazardous Materials in General. There is some handoff in oversight responsibility between the City Fire department and the Monterey County Environmental Health Haz Mat Division with regards to hazardous materials.

Timely response to the questionnaire requires us to follow-up with our Fire Dept with regards to identifying the cited document for 8a, b, and c.

b. Are spill control and cleanup supplies required at industrial and commercial properties that store hazardous materials and chemicals outdoors? If so, in what document is the requirement sited?

Yes, spill control and cleanup supplies are required at industrial and commercial properties that store hazardous materials and chemicals outdoors.

c. Are storm drain inlet shut off valves or secondary containment structures required at industrial and commercial properties that store hazardous materials and chemicals outdoors? If so, in what document is the requirement cited?

Yes, storm drain shut off valves or secondary containment structures are required at industrial and commercial properties that store hazardous materials and chemicals outdoors.

9. *Infiltration and Testing Requirements*

a. Are septic systems within leach fields present within City limits? If so, where are they located, and approximately how many exist?

There are only a few, remote leach fields present within the City limits.

There may be about a half dozen homes on San Juan Grade at the corner of Russell Road that are on septic tanks. There may be one additional home on Garner Ave near the Vista Nueva Subdivision that is on Septic Tank. These homes were developed and are located in Monterey County's jurisdiction.

Rob Russell is aware of a redwood septic tank located on either Deer Street or Santa Clara Street (off North Main Street) that was removed 5 +/- years ago, and there may be some other older homes in the area (no more than 6) that may or may not have septic systems. There may be one additional home on Garner Ave near the Vista Nueva Subdivision that is on Septic Tank. Finally, developments north of the Salinas City limits, developed in the County (but located adjacent to the City) are on septic systems and leach fields. This area is generally located north of Russell Road, between Van Buren and in the Bolsa Knolls area east of San Juan Grade Road.

b. If leach fields are permitted, are soil infiltration testing methods required and is there a minimum depth to groundwater that must be identified prior to permitting infiltration of treated waste water?

New leach fields are not permitted (Chapter 36, Section 36-10 City Code). Not aware of any requirement for soil infiltration testing for existing structures.

New leach fields and/or septic tanks have not been permitted to the City's Engineer's knowledge, and are generally not permitted unless they are design to readily adapt to a future sanitary sewer collection system.

c. What soil infiltration testing methods, if any, are commonly used in Salinas area?

The City of Salinas 2004 Standard Specifications, under Part II of the Storm Drain Design Standards (pages 128-139), the engineer is provided guidelines for submittal requirements which include "treatment Control Best Management Practices (BMP) for Design. Infiltration only basins/trenches are allowed only at locations where soils provide an adequate percolation rate typically Hydrologic Soil Groups A and B, and with the approval of the City Engineer (page 137).

We are unaware of any percolation test we've recently conducted in the City because leach fields have not been used for sanitary sewer purposes. Generally, a moderate rain will not percolate into the top layer of soil and usually rains delay construction until the top layer of soil is removed; exposing acceptable soils conditions.

d. If soil infiltration testing and/or other soil tests are required, are the data required to be reported on a permit application or in reports related to site development?

Not aware of any soil infiltration tests or reporting requirements.

e. Are there any documented cases of nitrate contamination of groundwater resulting from infiltration of waste water from septic system leach fields?

Not aware of any documented cases.

10. Storm Drain System Maintenance

a. Who is typically responsible for the operation and maintenance (O&M) of storm drain facilities on private property? How are these responsibilities documented? What department in the City is responsible for making sure that these facilities are recorded and maintained?

The property owner is responsible for O&M of private property. Not aware of any maintenance documentation requirements from private facilities. Storm water facilities for public systems (and sometimes, but rarely private systems) are recorded on as-built plans that are maintained by Development and Engineering Services Department. Not aware of any ongoing program to document or oversee maintenance on private property. With regard to retention/detention ponds provided for new development, most of these "private facilities" are either maintained through a separate maintenance district over which Maintenance Services supervises (John Sorensen), or they become the responsibility of the

owner(s) with their maintenance compliance historically reviewed by the Water Resources Planner (Warren Kahn and Leo Havener).

b. How is the O & M of private storm drainage facilities typically funded?

The O&M is the sole responsibility of private property owner. Oftentimes, this is through either CC&Rs and an owner's association, or if part of a Maintenance District it is included in an annual Maintenance District managed by the City of Salinas

c. How frequently does the City sweep its streets and clean its storm drains and what equipment is used?

Commercial Routes are swept weekly. Residential Routes are swept once every other week. The City maintains two full time sweepers with one reserve for additional sweeping duties (islands, centerlines, extended routes etc…). One older sweeper is maintained as a backup during maintenance of the primary sweepers. The City maintains two regenerative air sweepers, one mechanical and one vacuum sweeper.

All storm drains are inspected and cleaned, as needed a once annually prior to the wet weather season. Additional cleaning takes place as a specific maintenance need is identified. Two hydro/vac trucks and 1 vacuum catch basin cleaner are available for this task.

d. Where is the waste material from the City's street sweeping and storm drain cleaning operation stored and disposed?

Material is stored at the City Corporation Yard and loaded into dumpsters for disposal at the landfill.

e. How frequently are the City's major storm drain structures inspected? (e.g. storm drains trunk lines, outfalls, detention basins. Etc..).

All major outfalls and detention basins are inspected annually. There currently is no routine inspection of storm trunk lines.

f. What legal mechanisms are available to the City to inspect storm drain systems located on private property?

City code (Chapter 29) establishes storm water management and prohibitions for illicit discharges with a list of authorized persons (Article III) with authority to issue citations for violations of the City Code. Chapter 29 is not included in the

enforcement section but may be included under the General umbrella of Chapter 37.

The City has storm drain systems in private property within storm easements that the City maintains. In this case, these are inspected/maintained simply by notifying the property owner in advance of scheduling the work.

g. *Can the City assess fines and conduct maintenance of storm drain systems located on private property when a problem is identified and public health and safety is compromised or the water quality of receiving waters is impaired by practices or the lack of maintenance on that property? If so where is the ordinance/regulation cited?*

Yes. Chapter 29 of City Code, Article III.

11. *What training and education opportunities (either sponsored by the City or other organizations) are available for the planners, designers, owners and operators of new residential, commercial and industrial developments with respect to implementing methods to reduce urban runoff impacts to local water resources?*

The City is in the process of developing training and education opportunities/brochures for planners, designers, owners and operators of new developments with respect to implementing methods to reduce runoff. Currently APWA, CASQA, and other governmental and industry groups do offer webcasts and other training opportunities.

The RWQCB has held seminars in this regard that have been attended by City staff and the development community, and Engineering Services staff is discussing these issues with applicants more frequently. Just today (June 21, 2006) Rob Russell met with two developers (McDonald's remodel on North Main Street) and the Los Laureles Senior Housing Project to discuss their project; the discussions which included information on the City's NPDES permit, requirements for lower impact development strategies, and desired elements of the storm water management plan.

Appendix C

Salinas Precipitation Analysis

Precipitation Frequency Analysis

Salinas, California

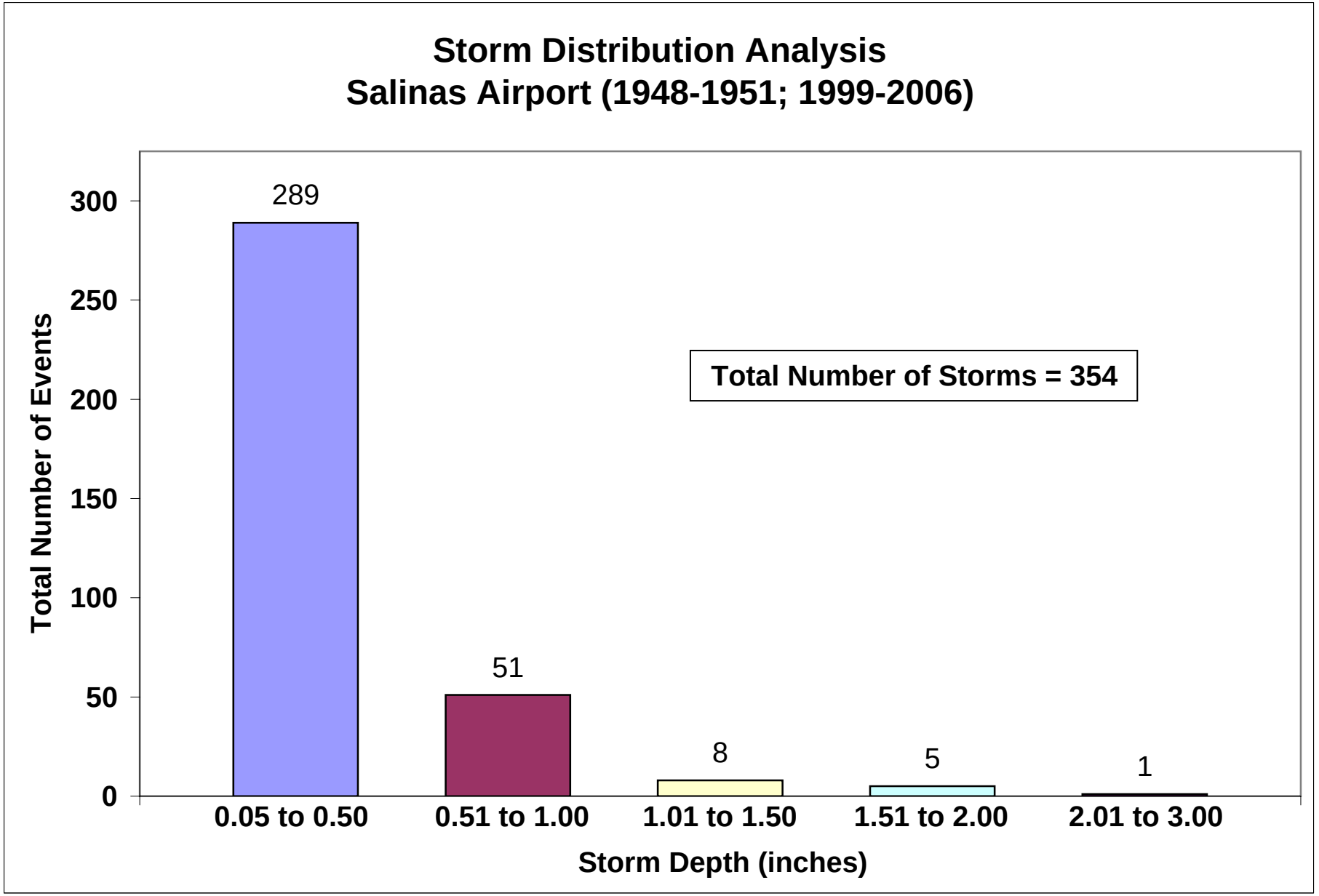
August 7, 2006

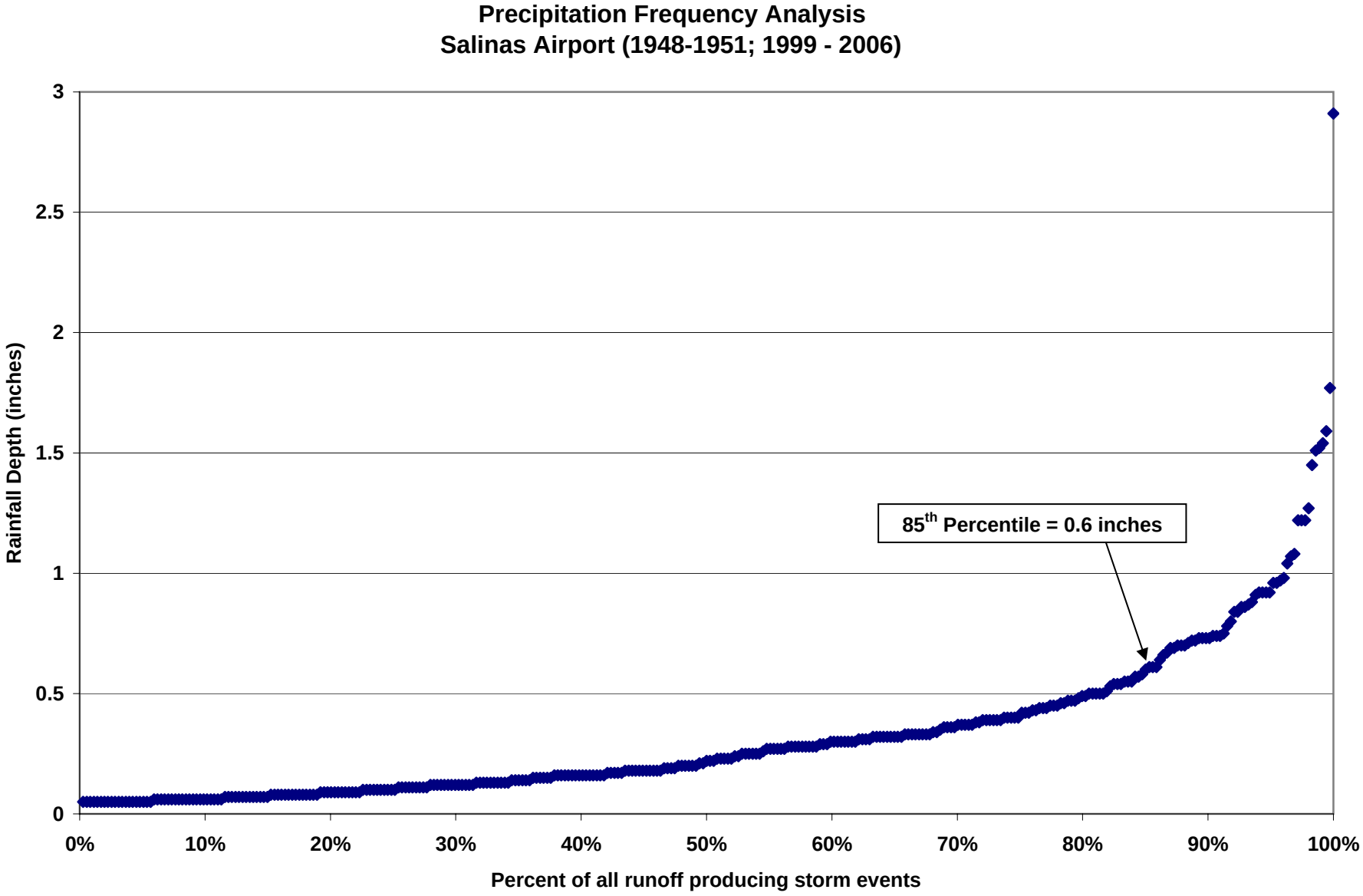
A precipitation frequency analysis was conducted using hourly precipitation data for the Salinas Municipal Airport obtained from the National Climatic Data Center (NCDC). Hourly data was only available for this station from 1948 to 1951, and 1998 to 2006*. Runoff producing storm events were considered to be 0.05 inches or greater in depth, with a 6 hour dry period between storms. Based on these parameters there were a total of 354 storms and the 85^{th} percentile storm had a rainfall depth of 0.6 inches.

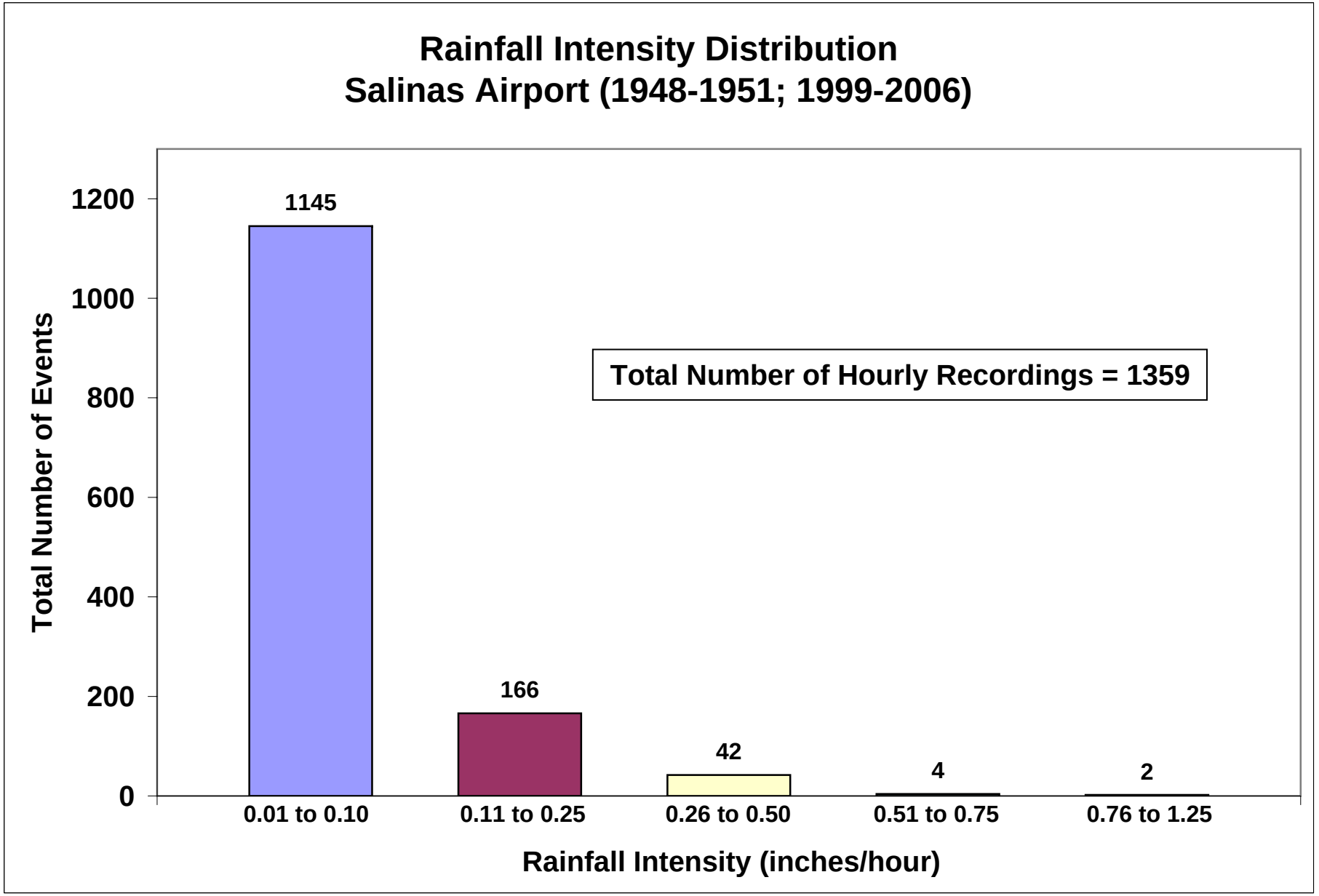
A similar analysis of rainfall intensity was conducted using all of the data recorded during the period of record. The analysis indicated that the 85^{th} percentile hourly rainfall intensity for the City of Salinas is 0.11 inches/hour.

Notes:

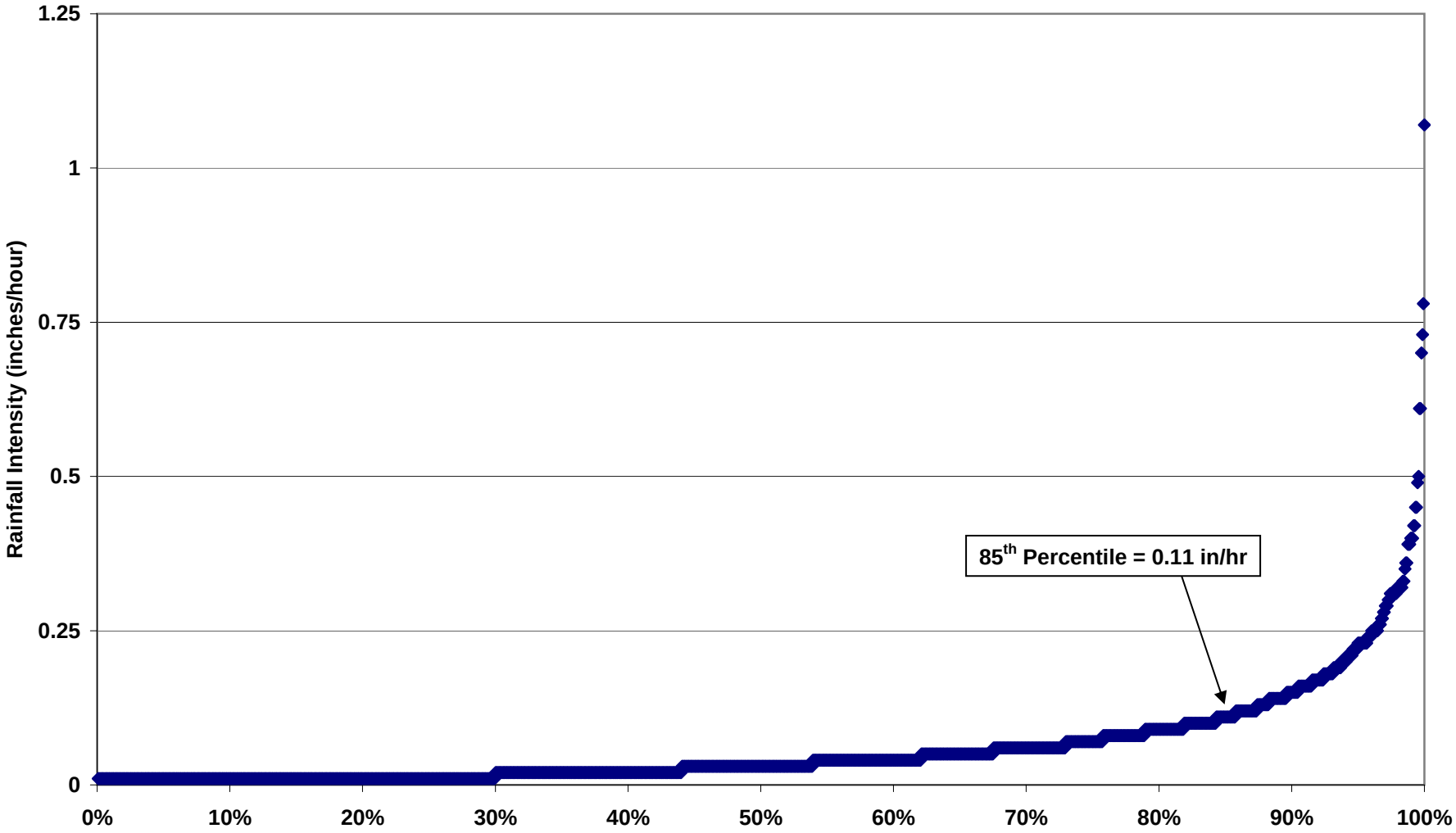
* According to the Western Regional Climate Center (WRCC), the record ended in 1951 when the gauge was removed. The station was reportedly inactive between 1952 and 1998 and became active again in September 1998 when new automated equipment was installed. The 2006 data utilized for this analysis was from January to June.


Storm Distribution Analysis
Salinas Airport (1948-1951; 1999-2006)
Total Number of Events
300
250
200
150
100
50
0
289
51
8
5
1
Total Number of Storms = 354
0.05 to 0.50
0.51 to 1.00
1.01 to 1.50
1.51 to 2.00
2.01 to 3.00
Storm Depth (inches)


Precipitation Frequency Analysis
Salinas Airport (1948-1951; 1999 - 2006)
Rainfall Depth (inches)
3
2.5
2
1.5
1
0.5
0
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
Percent of all runoff producing storm events
85th Percentile = 0.6 inches


Rainfall Intensity Distribution
Salinas Airport (1948-1951; 1999-2006)
Total Number of Events
1200
1000
800
600
400
200
0
1145
166
42
4
2
Total Number of Hourly Recordings = 1359
0.01 to 0.10
0.11 to 0.25
0.26 to 0.50
0.51 to 0.75
0.76 to 1.25
Rainfall Intensity (inches/hour)

Precipitation Frequency Analysis
Salinas Airport (1948-1951; 1999 - 2006)



Appendix D

Public Education & Outreach

City of Salinas Public Education & Outreach
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LOW IMPACT DEVELOPMENT AND DESIGN STANDARDS AND ORDINANCE REVIEW WORKSHOP
AUGUST 10, 2006

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Assured Aggregate Co., Inc.	443-8644		443-9578	
Ausonio, Inc.	633-3389		633-4004	
Axiom Engineers, Inc.	649-8000		649-8038	
Bakri, Nobi (Designer)	753-2300			by mail
Belli Architectural Group	424-4620		424-4408	
Bestor Engineers, Inc.	373-2941		649-4118	
Bill Shaw Development	754-1911		422-5533	
CHISPA	757-6251		757-6268	
Christian Lee & Associates	424-9000		424-9001	
Cornejo, Roger (Architect)	422-1046		422-1952	
Creekbridge Homes	443-6533		443-6535	
Cuin, Victor (Designer)	444-0339	262-5321		by mail
Eckhaus, Enrique (Draftsman)	794-2461		417-1910	
Elliott, Dave (Designer)	663-1418			left messasge
Fletcher & Hardin Architects	373-5855		373-5889	
Flores, Juvencio (Designer)	770-0323			left message
Graebe, Gerald A. & Associates, Inc.	422-6409		422-3275	
Granite Construction	768-4099		768-4096	
Grice Engineering & Geology, Inc.	422-9619		422-1896	
Guerrero, Ernesto (Designer)				by mail
Haro Kasunich & Associates	722-4175		722-3202	
Hawkins, Daryl	649-1701		649-3072	
HBFL	757-8001		757-0918	
HD Peters & Associates	424-3961		424-2746	
Hodgin Dennis AIA Architects	655-1024		655-1354	
Hodgin, Dennis (Architect)	655-1024			already received
Howard Carager Associates	373-3119		373-5872	
Kasavan Arachitects	424-2232		424-2501	
Kleinfelder, Inc.	755-7900		755-7909	
Landset Engineers	443-6970		443-3801	
Lee & Pierce, Inc.	758-0096		758-1213	
List Engineering Company	373-4390		373-6522	
Manroy, Julio (Designer)	442-0850			by mail
Mark Thomas & Company, Inc.	754-4412		754-4413	
Mendoza, Joe (Designer)	970-1503			by email
Michael Wadsworth, Architect	455-0360		call back	
Mid Coast Engineers	724-2580		724-8025	
Mill Construction	424-0781		424-0500	
Monterey Peninsula Engineering	384-4081		883-1372	
Norris, Mark (Draftsman)	424-2114		771-2114	
Paul T. Beck Contractors, Inc.	633-1358		633-1360	
Quintero, Art (Draftsman)	424-5191		424-5864	
Reinhart, Ed (Designer)	422-1046		422-1952	
Reynoso, Alex (Architect)	320-2655			left messasge
Richard Rhodes	643-0100			already received
Rincon, Rudy (Designer)	422-1046		422-1952	

LOW IMPACT DEVELOPMENT AND DESIGN STANDARDS AND ORDINANCE REVIEW WORKSHOP
AUGUST 10, 2006

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Sal Munoz & Associates	771-2802		771-2818	
Sandis Humber Jones	442-1100		969-6472	
Sauer, Arthur	424-6052		424-6052	
Saylor Architects	372-9215			left message
Slama, Brent (Designer)	210-5487			by email
Standard Pacific Homes	408-871-4400		408-376-0487	
The Don Chapin Company	663-4273		663-2177	
Tullis, Jim (Designer)	775-1263			unable to attend
Tunstall Engineering	758-2765		758-2141	
Vaca, Sergio (Designer)	753-6941	262-0440		by mail
Valley Community Homes	753-6487		753-6480	unable to attend
Vasquez, Jose Luis (Designer)	210-1851			by mail
Wald, Runke & Dost	649-4642		649-3530	
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City of Salinas Public Education & Outreach
Workshop No 1 Agenda & Notes

Agenda

Workshop No. 1

Low Impact Development Design Standards and Ordinance Review for the City of Salinas and the Central Coast Regional Water Quality Control Board

Thursday June 22, 2006 (1:00 to 4:00 PM)

City of Salinas West Wing Conference Room (City Hall)

200 Lincoln Avenue, Salinas, CA 93901

1. Welcome and Introductions (5 minutes)
2. Workshop Goals (10 minutes)
3. Regulatory Framework for New Development and Significant Redevelopment Standards (20 minutes)
4. Performance Requirements - Numeric Sizing Criteria (20 minutes)
5. Example Low Impact Development (LID) standards and Best Management Practices (BMPs) for the City of Salinas (30 minutes)
6. Project Objectives and Schedule (15 minutes)
7. Project Task Status (15 minutes):
    a. Document and Ordinance Review
    b. Soil and Shallow Groundwater Mapping
    c. Model Ordinance
8. Recommended Public Outreach and Education Process (10 minutes)
9. Questions and Discussion (50 minutes, if necessary)
10. Next Steps (5 minutes)

Workshop No. 1 Notes

Low Impact Development Design Standards and Ordinance Review for the City of Salinas and the Central Coast Regional Water Quality Control Board

Thursday June 22, 2006 (1:00 to 4:00 PM)

City of Salinas West Wing Conference Room (City Hall)

200 Lincoln Avenue, Salinas, CA 93901

1. Welcome and Introductions
    a. Attached Sign in sheet
2. Workshop Goals -
    a. Explain NPDES permit requirements for new development and redevelopment new development and redevelopment
    b. Discuss potential BMPs and applicability of Low Impact Development in Salinas
    c. Discuss development of tools to assist with planning and implementation of LID planning and implementation of LID 4.4.
    d. Obtain feedback from City staff, local Obtain feedback from City staff, local development community and othersdevelopment community and othersKennedy
3. Regulatory Framework for New Development and Significant Redevelopment Standards (10 minutes)
    a. Q: Michael Ricker- define LID- mimic pre-construction/post construction
    b. Q. Dan Mathias, Wood Rodgers - conflicts w/ existing city ordinances to provide detention for less than existing conditions; Chris- try to keep runoff from increasing
    c. Q. Jim Sullivan, Braddock and Williams – Developments in Bay Area- comment, geotech engrs trying to get water away from foundation; with lot sizes shrinking, 3 -4' side yard setbacks, roof to French drain to face of curb; some cities (Campbell)- don't want French drains/area drains, want surface drain; problems – if don't do as part of original development; individual homeowners are changing landscaping (paving sideyards) contractors are not as professional- alert City's to potential issues; small infill projects don't lend themselves to HOA, City of SJ – project originally proposed bioswale in 4 yards, who is responsible?

        Donette – one element that will help – City's public education/outreach; homeowners education needs to be strong and ongoing;
    d. Donette – ordinance issues – please highlight issues to City during ordinance update
4. Performance Requirements - Numeric Sizing Criteria (20 minutes)

5. Example Low Impact Development (LID) standards and Best Management Practices (BMPs) for the City of Salinas (30 minutes)

   a. Gary Wood – EDAW Grassy swale – natural gradient in W. area - < 0.5%- how to manage shallow grades

   b. Joni – if the gravel bed underneath has a gradient and the go to subsurface stormdrain

   c. Gary Wood – CalTrans data on performance level - Vegetated Swales/Buffer Strips – minimum for 100'

   d. City – where does lead go? Held in sediments/soils; Does it have to be monitored?

   e. Gary Wood – structured such that accumulated sediments need to be removed after 20 – 30 years

   f. Joni – Detention basins especially need to be cleaned out

   g. Gary Wood – concept with surface runoff – how much pollution from roofs? Birds, atmospheric runoff, (60% of pollutant is from atmospheric in Lake Tahoe). Emphasis on roof runoff vs other pollutant loads in Salinas.

   h. Janet – Under federal stds Salinas air quality is good but doesn't meet ozone and other standards.

   i. Sandy- Wood Rodgers? – Examples show drainage devices in spacious areas – 9 units/net acre of development – smaller single-family, alley loaded houses- Portland example for dense urban core,

   j. Donette- multi-use of space for many purposes

   k. Sandy - porous pavement – doesn't last as long - Chris 30 year long porous pavement in Phoenix , Denver-studying different types and developing design criteria. Used extensively in Europe, provides WQ improvement, reduces erosion and provides a much safer driving surface – no ponding - no spray.

   l. Gary Wood – unique opportunity that City of Salinas allows that water quality can occur in parks, not so in other jurisdictions

   m. KJ to provide information on Porous Pavements

   n. Gary Wood - Standards try to be specific to Salinas

   o. Donette – caveat, clay soils, if trying to match pre- and post construction runoff, more runoff than in sandy soils

   p. Steve Loup – HMH – soil borings for construction reasons, 2-3 feet deep, how deep to go? Chris - At least 10' and first encountered groundwater

   q. Sandy – clay soils, need to be able to break soils up for landscape, can incorporate LID into landscape

r. Gary Wood – larger bioretention – depth of temporary water ponding– required for fencing? 2-3' deep? Joni – 12-18" maximum water depth- no specific ordinance or code identified – to be reviewed by consultant team

s. Gary – Boise Idaho - bring water in from street into parking lot vegetated area?

t. Gary – Joni's slides- seasonal pond- season or a few days? Intermittent pond (Moss Landing- 2 weeks, avoid vector problem- Long Marine Lab- strong wind prevents vectors

u. Gary- Denver, Colorado - combined sand filter detention basin- combo of detention and water quality

v. Jim Sullivan – Denver How big is the detention? roughly ½ acre, very deep, perhaps for snow storage too

w. Michael Ricker – Denver- could plantings been used to improve nutrient removal? yes

6. Project Objectives and Schedule (5 minutes)

7. Project Task Status (15 minutes):

   a. Document and Ordinance Review

   b. Soil and Shallow Groundwater Mapping

   c. Model Ordinance

8. Questions and Discussion

   a. Next Meeting August 10, 2006. Will discuss Model ordinance, Mapping and identification of reasonable/applicable BMPs for this area

   b. KJ to provide selection matrix - review source control (onsite infiltration) first, end-of-pipe treatment control second

   c. Gary Wood - Infiltration rates are highly variable and difficult estimate – for specific plan? Yes – use available information, discussion on use of data from local farmers, soil scientists, etc. as part of GIS-BMP screening tool.

   d. Sandy - Extrapolating- per unit benefits

   e. Dan Matthias – Comment - Private properties have difficulty controlling LID over multiple landowners

   f. Comments – work in the concepts on a neighborhood level, as opposed to individual homes

   g. General Plan – 9 units/acre density – to preserve best ag land resource, develop lesser quality ag land

Sign In Sheet

Workshop No. 1

Low Impact Development Design Standards and Ordinance Review

City of Salinas and the Central Coast Regional Water Quality Control Board

K/J Job No. 0695006

June 22, 2006 (1:00 to 4:00 PM)

City of Salinas West Wing Conference Room (City Hall)

200 Lincoln Avenue, Salinas, CA 93901

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City of Salinas Public Education & Outreach
Workshop No 2 Flier, Agenda & Notes

LOW IMPACT DEVELOPMENT AND DESIGN STANDARDS AND ORDINANCE REVIEW

1:30 pm - Thursday August 10, 2006
Salinas Community Center (in the Gabilan Room)
940 North Main Street, City of Salinas

Significant changes to development design standards are mandated by the City of Salinas 2005 National Pollutant Discharge Elimination System (NPDES) permit with the state Regional Water Quality Control Board. The new standards will incorporate required Low Impact Development (LID) strategies for the treatment and management of storm water runoff. New development and significant redevelopment in the city will be required to comply with these new standards.

A workshop to introduce these changes in the City of Salinas will be held on Thursday, August 10, 2006 at 1:30 pm in the Gabilan Room at the Salinas Community Center, 940 North Main Street, in the City of Salinas.

This workshop will provide

- an overview of the NPDES storm water permit requirements
- a summary of the current policies and procedures that support and potentially conflict with LID principles and practices, and
- examples of the Best Management Practices (BMPs) that can be applied and will likely be required at residential, commercial and industrial developments.

This Workshop is the second in a series of four workshops conducted by the environmental engineering firm of Kennedy/Jenks Consultants and sponsored by the Central Coast Regional Water Quality Control Board for the City of Salinas. The first workshop highlighted development requirements for large planned future developments. The third and fourth workshops will focus on the proposed new development standards.

The general public, especially those involved in the planning and design new facilities and redevelopment, are encouraged to attend and participate.

These workshops are sponsored by the Central Coast Regional Water Quality Control Board.

Agenda

Workshop No. 2

Low Impact Development Design Standards and Ordinance Review for the City of Salinas
Sponsored by the Central Coast Regional Water Quality Control Board

Thursday August 10. 2006 (1:30 to 4:00 PM)

Salinas Community Center (Gabilan Room)

940 North Main Street, Salinas, CA

1. Welcome and Introductions
2. Workshop Goals, Project Objectives and Schedule
3. What is Low Impact Development (LID)?
4. Regulatory Requirements for New Development and Significant Redevelopment
5. Summary of Questionnaires and Document Review
6. Salinas Soils and Shallow Groundwater
7. Tools for Selection of Treatment Controls & LID Practices
8. Public Outreach and Education Process
9. Questions and Discussion
10. Next Steps (next meeting September 28, 2006)

JONI L. JANECKI
& ASSOCIATES, INC.

MEETING MINUTES

TO:	Chris Conway, Kennedy-Jenks
FROM:	Sarah Peterson, Joni L. Janecki & Associates, Inc.
CC:	Joni Janecki
PROJECT:	Salinas LID - CCRWQCB
REGARDING:	Workshop #2
ATTENDEES:	Approximately 65 people. See sign in sheets (attached) for list of participants.

1. Rob Russell (RR) introduced the project and workshop presentation. RR stated that the NPDES requirements are new to the City of Salinas. In order to meet the permit requirements the City of Salinas will be changing development permitting process. RR pointed out the City staff in attendance that will be instrumental in the permitting, inspection and maintenance of the LID projects. RR introduced Chris Conway (CC) of Kennedy-Jenks Consultants and Sarah Peterson (SP) of Joni L. Janecki & Associates, Inc. as the consultants to the City to help develop design requirements and streamline the City's processes in handling the NPDES permit requirements. RR noted that thinking about storm water early in the site planning process would be an important in LID projects.
2. Chris Conway started his presentation of NPDES program requirements by taking an informal poll of the relation of the attendees to the LID. Approximately 1/3 of the audience was part of the City of Salinas Staff, 1/3 were local engineers involved in Salinas projects. The remainder of the attendees had another related interest in learning about the program. CC explained that the presentation is intended to encourage discussion and that questions and comments were welcome during the session.
3. CC presented four PowerPoint slide shows. The content followed the agenda outline:
    a. Workshop Goals, Project Objectives and Schedule
    b. What is Low Impact Development (LID)?
    c. Regulatory Requirements for New Development and Significant Redevelopment
    d. Summary of Questionnaires and Document Review
    e. Salinas Soils and Shallow Ground Water
    f. Tools for Selection of Treatment Controls &LID Practices
    g. Public Outreach and Education Process

831.423.6040 FAX 831.423.6054 515 SWIFT STREET SANTA CRUZ, CA 95060
CA Landscape Architect License 3163

h. Questions and Discussion
i. Next Steps (next meeting Sept. 28, 2006)

The presentations will be made available on the City of Salinas website and on the Regional Board's website for the public to access.

4. Questions asked throughout the presentations are summarized here.
    - What do engineers/planners/developers do if the soils they are working with in Salinas have less than .5"/hour of water infiltration – more like .1"/hour with very little slope?
        - Site specific soil testing as part of the planning and site layout process
        - Amend soils
        - Put in underdrains
    - Is the requirement for limiting standing water to 48 hours a vector control requirement?
        - Yes. Carl Niizawa of the City of Salinas offered that Vector Control would allow up to 72 hours for standing water.
    - In response to the illustrations showing how porous pavements function and are constructed, a participant asked how drainage under paving affects the structural integrity of conventional pavement.
        - The porous pavements need to be separated by a barrier to protect the structural integrity of conventional pavement. In Salinas, the gravel base of porous pavement would need to be deeper (12" instead of 6") to account for the poor drainage and clay soils.
    - Comment: The building codes currently require that downspouts connect directly into the storm drain system. Note was taken to address this building code as part of the current project.
    - Comment/Question: Public Education & Outreach, the City noted that a flier about today's workshop had been emailed to the attendees. The list Kennedy/Jenks provided to the City that outlined the recommended groups that should be contacted about this and future workshops was reviewed and the question was asked as to what additional groups should be invited. It was suggested that the Builders Exchange and the local Conservation Service should be notified.
    - Comment /Question: If it is true that conventional storm water detention systems increase downstream erosion?
        - Yes, this situation can create erosion due to prolonged drainage into a receiving water body and not account for increased water runoff from another part of the watershed. Traditional systems address the peak flow but still direct unnatural volumes of runoff into receiving waters.

- How do we deal with runoff from parking garages or other highly urbanized downtown areas without landscape space available?
  - Planter areas in edges of parking garage
  - Waiver or mitigation program
  - Tree boxes in the streetscape
- How does treating clean roof runoff affect water quality?
  - Addresses heat island affect by reducing the temperature of urban runoff.
  - Slows the infiltration
  - Increases evapo-transpiration
  - Although roof runoff from residential roofs is generally of good quality, roof runoff from industrial/commercial buildings can contain pollutants from sources such as bird droppings and atmospheric deposition from internal and external processes.
- When does the MEP take cost into account? Can it cost too much?
  - MEP does contain an economic component. It will have to be proven with calculations that it is not economically feasible. Just because it is a new way of designing does not account for too much cost. Often times LID strategies produce cost savings. Be creative.
- Is it the top 6" of soil that contains the bacteria that breaks down many of the pollutants?
  - Yes. That is why surface infiltration is important.
- Why are vortex separators shown as an example of a treatment control BMP in your presentation?
  - Although vortex separators are not considered LID practices, if used they should be sized based on the required numeric sizing criteria for flow-based treatment controls noted in the NPDES permit. Manufactured treatment controls such as vortex separators typically do not treat dissolved pollutants such as nutrients, which are local pollutants of concern. Therefore they should not be used as stand alone treatment devices. They can be used to effectively address trash and can provide pretreatment for LID practices, but they must be regularly maintained.
- Will there be a time provision for a public review and comment period on the draft design standards developed for the Development Standards Plan?
  - Yes. The Regional Board and the City of Salinas will have to discuss how to accommodate this into the project schedule.

This report is considered a record of the discussions and observations made during the meeting as noted above. Any changes, clarifications or corrections to this report shall be made, in writing, to JLJA within fourteen (14) days of distribution. If no response is made, this report shall become part of the project record.

Workshop No. 2

Low Impact Development Design Standards and Ordinance Review

City of Salinas and the Central Coast Regional Water Quality Control Board

K/J Job No. 0695006

Thursday August 10, 2006 (1:30 to 4:00 PM)

Salinas Community Center (in the Gabilan Room)
940 North Main Street, City of Salinas

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